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Towards a framework for auditing environmental reports

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Publication date:
2002

Document Version
Publisher's PDF, also known as Version of record

[Link to publication in Tilburg University Research Portal](#)

Citation for published version (APA):
Kamp, A. E. M. (2002). *Towards a framework for auditing environmental reports*. CentER, Center for Economic Research.

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Towards a framework for auditing environmental reports

Nancy Kamp-Roelands

Towards a framework for auditing environmental reports

Proefschrift

Ter verkrijging van de graad van doctor aan de Universiteit van Tilburg, op gezag van de rector magnificus, prof.dr. F.A. van der Duyn Schouten, in het openbaar te verdedigen ten overstaan van een door het college voor promoties aangewezen commissie in de aula van de Universiteit op vrijdag 15 november 2002 om 10.15 uur.

door

Adriana Elisabeth Maria Kamp-Roelands

geboren op 6 november 1960 te Breda

Towards a framework for auditing environmental reports

Promotores: Prof. drs. A.D. Bac RA
Prof. drs. K.P.G. Wilschut RA[†]

No authority without responsibility

No responsibility without accountability (Van Traa)

No accountability without supervision

No supervision without audit (Wilschut)

General introduction

Auditing environmental reports is a new area that has been explored and described in this thesis. The writing of this thesis has led to a continuous struggle in terms of theory development. The boundaries between theory and practice development in an applied science such as accountancy are unclear. Some more pragmatic scientists prefer a normative research approach in order to improve existing practice, other scientists prefer an explanatory research approach which tries to identify and explain certain relations between variables. However, especially in new areas where people in practice are still learning and experimenting with these kinds of engagements and where literature was missing when this thesis was begun, it is difficult to start with explanatory research. This thesis is a compilation of various research studies that describe the state of the art in auditing environmental reports. In close consultation with my supervisor, I have decided to use the research results for the development of a framework for auditing environmental reports. The development of a framework for auditing environmental reports was the thread that connects these empirical research studies. The results of the empirical studies were used to further develop the theory-based framework that was an application of the more general theory of auditing as described by my supervisor, K.P.G. Wilschut. Sadly, he has not been able to see the end result.

For the most part the results of the different research studies have already been published in various journals. In addition, they have been used within the FEE Sustainability Working Party¹, especially for the publication of the FEE Research Paper on Expert Statements in Environmental Reports and for the FEE Discussion Paper Providing Assurance on Environmental Reports. Further, the results have served to comment on working drafts of the IAPC Standard on Assurance Engagements on Environmental Reports for which the Netherlands has the chair².

The writing of this thesis took quite a long time. In the meantime, the content of environmental reports has changed. Gradually they have changed, by including more social and economic information, from environmental reports to triple-bottom-line³ reports in which companies report on their economic, environmental and social performance. I am convinced that the general framework of auditing is also applicable to these kinds of reports. In every audit there is a subject matter, audit objectives, audit criteria and evidence that is collected to assess whether the subject matter complies with the audit criteria. However, more research will be necessary to identify the specific characteristics of auditing triple-bottom-line reports in order to adapt the

¹ Formerly named Environmental Working Party and Environmental Task Force.

² This project has been postponed.

³ Also referred to as sustainability reports, corporate social responsibility reports or people, planet, profit reports.

general framework of auditing to this particular field. What is changing is that auditing reports is no longer sufficient. Auditing is only one way to add to the credibility of the report. Increasingly, in addition to the audit, independent views of experts or non-governmental organisations on the company's policy, management and economic, environmental and social performance are included in triple-bottom-line reports. Whether companies provide these engagements for legitimacy purposes ('license to operate') or to fulfil the needs of users needs to be further investigated. Corporate governance structures are changing, as is the accountability provided by companies. They realise that in addition to the financial statements a broader accountability is necessary in order to safeguard their social acceptance by society and therefore their license to operate in society. Auditing is performed to add credibility in this continually evolving field. The subject matter and objectives of auditing are changing continually and therefore many research opportunities exist. Auditors in practice have to keep up with the ongoing changes in order to prevent losing market share.

I hope that this thesis provides a basis for auditing in this continually changing field.

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Chapter 1 Defining the research problem

1.1 Introduction

People within society are becoming increasingly interested in environmental, ethical and social issues in addition to economic issues. On a global level the interest in and concern for these issues resulted in an action plan for sustainable development, Agenda 21 (UN, 1992). Sustainable development was defined by the Brundtland commission (UN, 1987) as follows: *“To meet the needs of the present without compromising the ability of future generations to meet their own needs”*. For organisations sustainable development means conducting business in a way which meets the needs of the enterprise and its stakeholders today while protecting, sustaining and enhancing the human and natural resources needed tomorrow” (IISD, 1992).

Besides an environmental dimension, sustainable development has a strong social dimension. Sometimes, the environmental dimension is even referred to as part of the social dimension. Underlying the concept of sustainable development is the idea that integration of environment and development concerns and greater emphasis on them will lead to the fulfilment of basic needs, improved living standards for all, better protected and managed ecosystems and a safer, more prosperous future (UNEP, 1994). Companies have an important role to play in society. They provide products and services in order to fulfil society’s needs. In order to produce these products or provide these services they use people, money and resources. Agenda 21 identifies companies and industry as an important partner for sustainable development. In practice, attention is first given to environmental issues. More recently the ethical and social issues became part of the policy of some pioneering companies. The economic, ethical and social issues however are beyond the scope of this thesis¹.

In order to stimulate environmental performance, companies and industry are encouraged to recognise environmental management as one of the highest corporate priorities. They are also encouraged to communicate their environmental performance and to report “annually on their environmental records, as well as on their use of energy and natural resources” and “on the implementation of codes of conduct promoting best environmental practice” (UN, 1992). Environmental reports are a key channel for companies to communicate their environmental performance. Environmental reports are also an effective tool to demonstrate company-wide

¹ See for research on the contents of audit reports in triple-bottom-line reports on economic, environmental and social performance for example Kamp-Roelands, A.E.M.(2001) and FEE (2002) and for an overview of sustainable development for example in Bebbington (2000), Elkington (1999)

integrated environmental management systems, corporate responsibility, and the implementation of industry voluntary codes of conduct (UNEP, 1994).

On a European level the European Commission stimulates the implementation of environmental management systems and the publication of environmental reports by means of the EC Regulation “Eco-management and audit scheme”, also referred to as EMAS (EU, 1993, 2001). Compliance with EMAS is voluntary. If companies wish to participate in EMAS they have to engage an independent accredited verifier who assesses whether the environmental management system and the environmental report complies with the EMAS requirements.

On a country level environmental management and reporting is also stimulated. In some European countries, such as the Netherlands and Denmark, environmental reporting is even mandatory for certain companies. The underlying principle of this mandatory reporting is not only to stimulate better environmental management and performance, but also the ‘right to know’ (as also described in the EC Directive “Right to know”, 1990). The audit of environmental reports is not mandatory (yet).

As the number of environmental reports increases, it is expected that the need for auditing these environmental reports will likewise increase. In principle society has a right to reliable information (EC, 1990, Gray et al., 1997). The change of this right into a need for auditing environmental reports in order to emphasise their reliability may in general be due to the following reasons²:

- the environmental data provided in the environmental report is of relevance to society: the companies use air, soil, water and other (non-) renewable resources. They may produce noise and may be responsible for foul odours. The pollution or depletion of these goods has effects on public health and nature and is therefore important not only for us but also for the next generation. Accounting for pollution and use of these common goods to other users and providing reliable information on the way in which this pollution and depletion is controlled is necessary;
- the remoteness of the data: corruption is possible because this is not first hand knowledge; providers can, deliberately or not, provide inaccurate data;
- the bias and motives of the provider: the provider is likely to give mainly good news; it is even possible that the provider would like to use the environmental report mainly as a public relations instrument. Out of fear for a lawsuit or negative publicity, the provider will perhaps not always inform stakeholders about (all) the bad news;
- the voluminous data: in order to register pollution, a lot of measurement points, laboratory research, etc. is needed. This volume of data that needs to be recorded leads to an increased likelihood of mistakes in the data presented.

² see also literature on information risks such as Arens & Loebbecke, 1997

1.2 The research problem

The phenomenon

At the time when the research problem for this thesis had to be defined (in 1993) separate environmental reports were just beginning to be published in the Netherlands. In 1991, the UK subsidiary of Norsk Hydro was the first in Europe to have its 1990 environmental report audited. The environmental report of Norsk Hydro was audited by Lloyd's Register, defined in their audit report as a significant technical, inspection and advisory organisation. In their audit report one of their findings was formulated as follows:

“The figures in this report were found to give a true and fair view of existing environmental monitoring data”.

Two developments were important in initiating this thesis:

- the audit of information was no longer restricted only to accountants;
- other professionals use wording to express their conclusion on environmental information, which is similar to that used by accountants in their unqualified audit report on financial statements.

As auditing of information is expanded into other areas, in this case environmental information, one may assume that users eventually expect a quality in performing the audit and reporting the audit opinion that is similar to in auditing financial statements. Such quality considerations concern not only professionals from a domain different than that of financial accounting that are going to be involved in audits of information but also accountants that enter this new field of auditing. It is important to retain the confidence of users of audits.

While writing this thesis it emerged that certain “problems” or “challenges” occurred in this early stage in the development of auditing environmental reports:

1. the basis for an environmental report should be an adequate environmental information system. Most companies however are still developing such a system. It appeared that this is the least developed part of the environmental management system (Kamp-Roelands & Bouma, 1998; UN-ISAR/Gray and Bebbington, 1995).
2. at the present time, no generally accepted standards exist regarding:
 - measurement methods for emissions;
 - accounting for environmental performance;
 - the contents of an environmental report;
 - auditing environmental reports;
 - wording of environmental audit reports; and

3. at the present time engagements differ (Kamp-Roelands, 1996). The audit of environmental reports is not mandatory and therefore companies can issue engagements that differ, in relation to, for instance:
- the subject matter of the audit;
 - the objective of the audit;
 - the level of assurance given; and
 - the audit criteria that should be used.

As the market for services in the field of auditing environmental reports slowly increased the audit of environmental reports displayed a great deal of variety. Not only were the engagements different, but also the kind of audit procedures performed and the way the audit report and opinion were formulated. At present different kind of experts, such as consultants, engineers, lawyers and accountants are involved in auditing environmental reports. Mostly the engagements are performed by accountants and/or environmental consultants. Because no generally accepted standards are yet available, differences exist in the audit procedures performed and the way in which the results of the audit are communicated to stakeholders by means of the audit report. Therefore a breeding ground for an expectations gap exists. The phenomenon of the variances in these audits is described in more detail in chapter 4.

Why is this phenomenon a problem?

The variety in both the audit approach and the audit report may cause a problem. If the variety in audits of environmental reports leads to an expectations gap, this may lead to a loss of confidence in the auditors³ and eventually to a loss in the need for these services of auditors. In those situations users may search for alternative ways to satisfy their need for assurance on environmental reports.

What contribution can be made to solve this problem?

In order to add quality and provide greater consistency in the audit procedures to be performed and in the structure of the audit report, a framework can be developed on which further practical guidance can be based. Piet (1996) concluded in his thesis “Accountability and environmental management” that the accountancy profession can contribute to environmental corporate strategy, environmental controlling, environmental reporting and environmental auditing. Various professional accountancy bodies such as the International Federation of Accountants (IFAC, 1995), the Association of Chartered Certified Accountants (ACCA, 1996, 1993) and the Canadian Institute of Certified Accountants (CICA, 1992) have already published

³ In this thesis the term auditor is used to refer to all those professionals who perform the audit of environmental reports, although in practice not all of these professionals meet the requirements of an auditor. When a specific reference to their background is necessary, a distinction is made between accountants and environmental consultants.

discussion papers in which the role of the accountant in relation to the environment is discussed. In the Netherlands, the Limperg Institute published a paper in 1992 on the accountancy profession and the environment (Blokdijs et al., 1992) and in 1999 the Dutch professional body Royal NIVRA published an environmental policy plan on the role of the accountant in relation to the environment (Koninklijk NIVRA, 1999). In the Netherlands even an association of environmental accountants was founded in 1992. In its International Standard on Assurance Engagements (ISAE)⁴ IFAC recognises that accountants can provide assurance on subject matters other than financial information. The standard provides an overall framework for assurance engagements intended to provide either a high level or a moderate level of assurance. Further, the standard establishes basic principles and essential procedures for accountants in public practice for the performance of engagements intended to provide a high level of assurance⁵. With the overall framework of assurance engagements as a basis, IFAC decided to develop more specific guidance for the audit of environmental reports⁶.

The framework proposed by IFAC is still written from the perspective of an accountant. However, the issue of multidisciplinary teams is important because it may be doubted whether the accountant can always be the lead auditor for the variety of subject matters proposed in the International Standard on Assurance Engagements. The possibility exists that the accountant co-operates with other auditors and shares the responsibility, or for some subject matters, it may even be that the accountant only assists other auditors (the latter as mentioned by Wilschut, 1990b). Unfortunately, this is not discussed in the overall framework of IFAC. Especially for the audit of environmental reports, these are possibilities that have to be taken into account. In future, in more specific standards on certain subject matters, IFAC will address this issue in more detail.

The accountancy profession, in order to improve quality, can contribute in developing further guidance on environmental management systems (especially the environmental information system included), environmental reporting and environmental auditing. The accountancy profession has many decades of experience and has existing theories and frameworks. It is not necessary to invent the wheel twice. In developing practical guidance for the audit of environmental reports the experience gained in auditing financial statements can be used in order to prevent making the same mistake twice.

⁴ This document was first published in 1997 as Exposure Draft of “Reporting on the credibility of information” and in 1999 as the updated version Exposure Draft “Assurance Engagements” and finally in 2000 as International Standard on Auditing 100 “ Assurance Engagements”.

⁵ Chapter 3 of this thesis describes the development of a framework for auditing. I decided to leave the chapter in the way as it was already written before the publication of the IFAC framework and to add, where relevant, statements from the IFAC framework.

⁶ This project was postponed due to the discussion on the levels of assurance. Sofar, IFAC has not published more specific guidance for the audit of environmental reports.

However, difficulties may arise when theories and frameworks from one domain are used within another domain, and sometimes even by different experts. It is therefore not wise only to enforce environmental reporting and -auditing in existing accounting and auditing frameworks. The current situation needs to be examined and problems need to be identified. As mentioned several problems or challenges exist in this early stage of auditing environmental reports. In co-operation with the various users and experts and using their specific expertise, new frameworks can be developed. In this thesis both the state of the art in auditing environmental reports and a first initiative to describe a framework for auditing environmental reports are set out. The contribution of the accountancy profession to a framework for auditing environmental reports is also explored.

1.3 The research questions

In relation to the existing problems and needs as described in the previous paragraph the research problem can be described as follow:

“What are the contents of a framework for the audit of environmental reports?”

In developing a framework for auditing environmental reports it is important to gain an insight in the elements that are essential for forming professional judgements during the audit process and forming a final audit opinion. These include the subject matter of the audit, the audit objectives and the audit criteria. The audit of environmental reports is still in its early stage of development. No generally accepted audit criteria or auditing standards exist. The professional judgements made on the information provided in the environmental report are therefore quite subjective. By gaining more insight into the process of auditing and professional judgements made by today’s auditors of environmental reports, combined with existing theory on auditing, a first step towards the development of a framework can be taken.

A framework adds to the conceptualisation of the theory by explicitly delineating patterns. Based on a framework, standards and guidelines can be developed. However, there is no general description of what constitutes a theory. In general a distinction is made between a theory and a method. A method describes how to perform certain tasks, for instance how to perform certain audit procedures. A theory is in essence the expression of a relationship between two or more variables. Dubin (1978) mentions the following four essential elements for a complete theory:

1. What;
A theory includes the factors (variables, constructs, concepts) that logically should be considered as part of the explanation of the social or individual phenomena of interest.

2. How;
A theory describes how these factors are related. The “what” and “how” constitute the domain or subject of the theory.
3. Why;
A theory describes the underlying psychological, economic, or social dynamics that justify the selection of factors and the proposed causal relationships. This rationale constitutes the theory’s assumptions.
4. Who, where, when.
A theory sets the boundaries of generalizability.

During the theory development process, logic replaces data as the basis for evaluation. Next the links can be empirically verified. Research results also provide an insight in the boundaries of the theory.

The theory of auditing encapsulates a variety of research topics and can be approached from a number of different angles (Wallage, 1993). Wallage for example distinguishes between (a) the market for auditing; (b) auditing as a profession; and (c) the auditing process. Ashton, Kleinmuntz, Sullivan and Thomassini (1988) mention the following perspectives:

- a) Normative, what the auditor ought to do based on formal definitions of optimal response derived from theory (e.g. bayesian statistical decision theory, expected utility theory and game theory). A long history links normative and descriptive studies of decision making;
- b) Prescriptive, how does one design a better decision making system;
- c) Descriptive, focus on the actual behaviour and thought process of auditors. In order to improve the quality of audit decision-making we need to understand how the experienced auditor thinks and how to train the inexperienced auditor.

This thesis describes descriptive research that is used to develop a normative framework for auditing environmental reports.

Another distinction is made by Johnson et al. (1989):

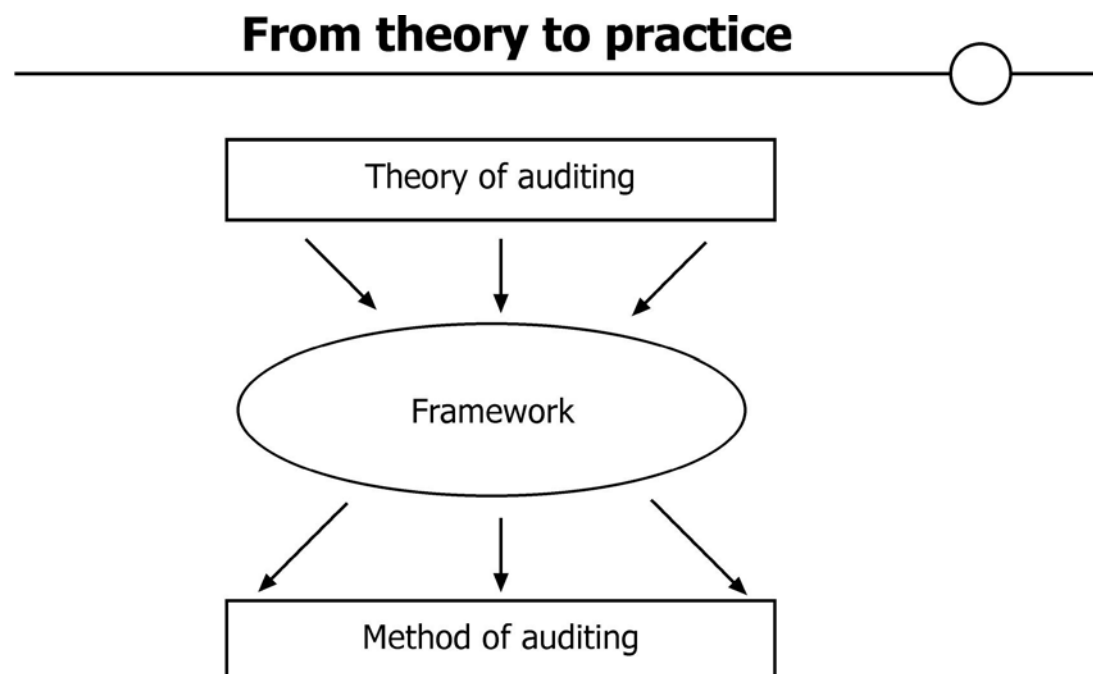
1. a theory of the auditor;
2. a theory of auditing; and
3. a theory of how to audit.

The first is a theory of persons or individuals who carry out a specific kind of audit task. The second is a theory of that task, and the third is a theory of a specific kind of activity. The first two are descriptive, the third is prescriptive. Especially in the United States of America, audit research focuses on the first kind of research. Much quantitative research has been performed to gain an insight into the audit judgement process. This research draws heavily on the findings and methodology of experimental psychology. Unlike the experimental psychologist who is interested in describing fundamental aspects of human cognition, the audit researcher is interested

in discovering the knowledge and reasoning process of a skilled problem solver (Johnson et al., 1989). By contrast the theory of auditing is a theory of the knowledge that is required to perform the audit task. Research in this field identifies evidence of the experience that guides what the task performer does (descriptive). It is this kind of theory that is important to further develop a framework for auditing environmental reports. During the research for this thesis therefore knowledge is obtained from experts that actually perform the audit task.

Figure 1.1 shows that the framework forms the link between a theory of auditing and a method of auditing.

Figure 1.1



Based on the research problem the following research questions exist:

1. What kinds of elements are generic to auditing?

In developing a framework for the audit of environmental reports, existing experience in the audit of financial statements can be used. However, the audit of environmental reports is performed from a different domain. Not the reflection of assets, liabilities and financial implications of operations are the subject matter of the audit, but the reflection of environmental implications of operations. Further, the needs of stakeholders for both environmental reporting and auditing may be different. This

may result in a difference in underlying assumptions, concepts and methods, techniques and tools. Therefore, I first identify what elements are generic to auditing. Next, such a framework can be described for the domain of auditing environmental reports. For designating such generic elements, philosophies developed by the accountancy profession are used to identify its possible contribution, especially in relation to:

- Underlying assumptions;
- Concepts;
- Methods, techniques and tools.

2. What is the state-of-the-art of the audit of environmental reports?

The research field is new and there is not much literature available. In order to develop a framework for auditing environmental reports an insight into the audit of environmental reports in practice is necessary. Exploratory research in this field can identify both the elements of auditing environmental reports and existing problems. The audit of environmental reports is new and it may be expected that there is as yet no consistency in the formulation of the audit engagement, or in the audit approach. Inconsistency in the audit of environmental reports is a problem only if it can lead to an expectations gap and, in turn, to (potential) wrong decisions or wrong opinions by users of environmental reports. If evidence is found regarding an expectations gap this emphasises the relevance of developing a framework for the audit of environmental reports. In relation to the state-of-the-art the following research questions exist:

- a. Is there a lack of consistency in the audit of environmental reports?
- b. If so, could this give rise to an expectations gap?

3. To what extent can practical experience contribute to a framework for the audit of environmental reports, especially in relation to:

- Planning;
- Audit procedures;
- Reporting?

In further refining the framework for auditing environmental reports, input is necessary from the experience already developed in practice.

1.4 Research method

In order to answer the research questions described above a research approach has to be chosen. In a review of research methods in the field of behavioural accounting, Brownell (1993) state that different kinds of research questions should be investigated with different methods. In general a distinction is made between qualitative and

quantitative research. Auditing environmental reports is a very new, and as yet undescribed, research area. In order to answer the research questions certain flexibility is needed. Using a qualitative research approach offers this flexibility. In relation to the kind of research questions asked (what, which, how) qualitative research again appears to be an appropriate choice. The differences between qualitative and quantitative research are described by many authors (for example Van Dijk 1993, Easterby et al., 1993, Wester en Maso 1991). Regarding the choice between these two kind of research approaches van Dijk (1993) comments that "...if there is not much knowledge on phenomena the empirical research will focus on exploring the phenomena (description, generating hypotheses etc.), if theoretical knowledge exist on the phenomena the research will focus on generalisation and testing hypotheses". Although designed for inquiry, the following overview as presented in table 1.1 and based on Glesne and Peshkin (1992) provides an insight into the various characteristics of quantitative and qualitative research.

Table 1.1 - Characteristics of quantitative and qualitative research

Quantitative research	Qualitative research
<i>Assumptions</i>	
Social facts have an objective reality	Reality is socially constructed
Primacy of the method	Primacy of the subject matter
Variables can be identified and relationships be measured	Variables are complex, interwoven, and difficult to measure
Etic (outsider's point of view)	Emic (insider's point of view)
<i>Purpose</i>	
Generalizability	Contextualization
Prediction	Interpretation
Causal explanations	Understanding actor's perspectives
<i>Approach</i>	
Begins with hypotheses and theories	Ends with hypotheses and grounded theory
Manipulation and control	Emergence and portrayal
Uses formal instruments	Researcher as instrument
Experimentation	Naturalistic
Deductive	Inductive
Component analysis	Searches for patterns
Seeks consensus, the norm	Seeks pluralism, complexity
Reduces data into numerical indices	Makes minor use of numerical indices
Abstract language in write-up	Descriptive write-up
<i>Researcher's role</i>	
Detachment and impartiality	Personal involvement and partiality
Objective portrayal	Empathic understanding

Source: table made on the basis of information in Glesne and Peshkin, 1992

The assumptions stated by Glesne and Peshkin are based on certain philosophies or paradigms. The assumptions as described under quantitative research are based on the positivist paradigm. In this paradigm the world is described as existing externally and that world is objective. The observer of phenomena is assumed to be objective and science is perceived as value-free. The assumptions as described under qualitative research are based on the phenomenological paradigm. This paradigm is described by Burrell and Morgan (1979) as assuming the world to be socially constructed and subjective. The observer is assumed to be part of what is observed and science is part of what is observed.

According to Easterby et al. (1993) using the positivist paradigm and quantitative methods can provide wide coverage of the range of situations; they can be very fast and economical; and particularly when statistics are aggregated from large samples they may be of considerable importance for policy decisions. The methods however tend to be rather inflexible and artificial; they are not very effective in understanding processes or the significance that people attach to actions; they are not very helpful in generating theories and because they focus on what is, they make it hard for policy makers to infer what changes and actions should take place in the future. The phenomenological paradigms associated with qualitative methods have strengths in their ability to look at change processes over time, to understand people's meanings, to adjust to new issues and ideas as they emerge, and to contribute to the evolution of new theories. They also provide a way of gathering data, which is seen as natural rather than artificial. Weaknesses are that data collection can take up a great deal of time and resources, and the analysis and interpretation of data may be very difficult.

The choice between quantitative research and qualitative research will depend on the purpose of the research and the subject matter of the research. The purpose of this research, in order to develop a framework for auditing environmental reports, is to gain more insight into the elements that are important in making professional judgements on environmental reporting. The research describes the complex field of auditing environmental reports. Certain flexibility in research approaches is needed. The research is exploratory. The first step in the research is developing a framework to describe topics that will act as initial guides. These topics will, when necessary, be adjusted to the field situation. The framework that will eventually emerge is based upon interaction between a literature search, document analysis and empirical research. The results of the empirical research are descriptive and may also provide a basis for further theory development. In further research, hypotheses can be formulated and tested to further develop a theory for auditing environmental reports. The research approach of this thesis is qualitative. In order to solve the research problem and answer the research questions, various research tasks are performed. In each chapter, the specific qualitative research method used is described in more detail. A chronological overview of the research tasks and the considerations made in the choices of the research method are described here. They include the following:

1. Literature search

In order to develop the theoretical foundation of the framework, literature was selected and read in the field of auditing in general and in the field of environmental auditing in particular. At the time when the thesis was started in 1993 not much literature on auditing environmental reports was available. If literature was available, it concerned literature on environmental and social reporting or on environmental management. Therefore I decided to hold some exploratory interviews.

2. Exploratory interviews

In order to explore the field of auditing environmental reports first some unstructured interviews were held with all major audit firms that have some form of activities within the environmental field in the Netherlands. In total interviews were held with four⁷ of the five big audit firms (Coopers & Lybrand, Deloitte & Touche, Ernst & Young, KPMG) and with one other large audit firm (BDO Camps Obers). Three of them were involved in the field of auditing environmental reports. Additional unstructured interviews were performed with these first auditors of environmental reports (two accountants and one environmental consultant) in the Netherlands. The initial purpose was to gain access to the field in order to describe their audit approaches and as such to further refine the framework for auditing environmental reports.

I had expected to find some kind of structured approach for auditing environmental reports. From the open interviews however it appeared that the subject matter of the audit and the audit objectives were different for every audit and concerning the audit approach, every auditor was evidently still experimenting with how to audit environmental reports. Since, at that time, only three environmental reports had been audited in the Netherlands, more insight had to be gained into the field of auditing environmental reports outside the Netherlands.

3. Content analysis of audit reports in environmental reports

The method chosen to gain more insight into this field was to collect environmental reports that were audited in Europe. The selection was limited to Europe, since this was the geographical area where such engagements were mainly performed (UNEP, 1994). There was no database available. Initiatives to audit environmental reports were not only limited to the larger companies, Therefore I decided to collect the environmental reports through the environmental working party⁸ of the European Federation of Accountants (FEE). The research results are described in chapter 4. The research provided amongst other things an insight into the subject matters of auditing environmental reports, the objectives, the audit criteria used and the way in which the audit opinion was stated. From the content analysis performed on the audit reports

⁷ Arthur Andersen in the Netherlands was not involved in the environmental field.

⁸ Now named the Sustainability Working Party

included, results similar to those of the unstructured interviews with auditors in the Netherlands appeared. The subject matters and audit objectives of audit engagements of environmental reports differed.

4. Survey on the existence of an expectations gap

The existence of differences in auditing environmental reports is only a problem when this causes an expectations gap⁹. In order to gain some insight into the possibility of an expectations gap, a survey was performed amongst auditors and auditees. The survey was limited to auditees since one may assume that if an expectations gap exists between auditors and auditees, an expectations gap also exists between auditors and users since they have no other insight into the scope of the engagements and the audit work performed besides what is written in the audit report. Based on audit reports in environmental reports of different European companies, questions were asked regarding the interpretation of the audit engagement and the interpretation of the audit report. The research is described in chapter 5.

5. Interviews/participatory action research

Companies are in different stages of environmental reporting and implementing environmental management systems. From research by the Dutch Instituut voor Arbeidsvraagstukken (IVA) in 1992 on the implementation of environmental management systems in the Netherlands, it appeared that companies were still working on implementing an environmental management system, which is the basis for environmental reporting. In implementing environmental management systems the emphasis was on the technical means to control the environmental impact of the company. From research of UN-ISAR (UN-ISAR/Gray and Bebbington, 1995) it appeared that the environmental information system was the least developed part of the environmental management system. Also, interviews with certifiers of environmental management systems revealed that during the audit of environmental management systems, no attention was paid to environmental information systems. Only the technical way of collecting data was important.

It appeared that auditing environmental reports was still quite experimental, finding the most effective way to audit the environmental report. Due to competition at that time between different experts in this field, especially between environmental consultants and accountants, there was in general no co-operation although this would have led to added value. Also there appeared to be a lack of internal co-operation between the different departments (environmental and accountancy) within audit firms. In relation to operational audits, there was at that time little or no attention for the environmental information system¹⁰.

⁹ See chapter 5 where the expectations gap is further explained.

¹⁰ The environmental information system forms part of the environmental management system

From discussions with several experts in the field of auditing environmental reports, it appeared that there was obviously a need for a framework for auditing environmental reports, on the basis of which practical guidance could be developed.

Therefore I decided to develop a framework for auditing environmental reports, not by means of describing the audits performed, but in an inductive way, and to specify this model by means of empirical research (e.g. active interviews in which the researcher participates in discussions and as such influences the current situation; participatory action research and verbal protocol analysis). In order to adapt the framework for the practice of auditing environmental reports, interviews are performed. Auditing environmental reports requires technical, auditing and accounting knowledge. Therefore the knowledge of both environmental consultants and accountants is necessary to develop the framework. Due to competition between audit firms, the audit firm selected required confidentiality as a condition for co-operation. This excluded participants from other audit firms. The interviews were therefore restricted to the environmental department of one audit firm only. However, this audit firm was the market leader in this field. Because the subjects interviewed at that time were not involved in multidisciplinary teams and no accountant in this audit firm had experience in the field of auditing environmental reports, the knowledge of the researcher was used in discussions on the audit process. During this development process, actual audits of environmental reports were attended. For the audit firm, the interviews resulted in an audit protocol for the audit of environmental reports. The results are used as input for the framework that is discussed in chapter 8.

6. Verbal protocol analysis, questionnaires and case study

The audit judgement process during the exploration stage was researched in more detail. During the process of designing an audit protocol it appeared from the interviews and attending the audits that especially the exploration stage differed from the audit of financial statements. During the audit of financial statements the exploration stage in which the audit approach, based on the risk analysis, is developed is quite important. However, during the audit of environmental reports no actual planning of the audit approach was made. Most of the 'planning'-decisions were made during the audit itself. This may lead to ineffective and inefficient audit procedures, because most decisions are made on an ad hoc basis. In order to gain more insight into the decision making process, experts involved in the field of auditing environmental reports were asked to think aloud during their decision making process at the exploration stage. Due to the complexity of the quantitative data, this was done on the basis of an actual case. In order to obtain data for an actual case, a case study was performed at a chemical company with which none of the experts had any relationship. Immediately after the thinking aloud session, the experts were also asked to answer questions in a questionnaire. The research is described in chapter 6.

7. Content analysis of audit reports

Based on the results of the first investigation of the content of audit reports, I made recommendations for the improvement of audit reports that were adopted by the Fédération des Expert Comptables Européens (FEE). Both the participating auditors and companies received the results of the exploratory content analysis as well as the FEE recommendations. The report was published in 1996. In order to further specify the contents of an audit report, both in relation to the topics and the wording, 'best practice' of audit reports can be used. Therefore the contents of existing 1997 European audit reports were analysed. The research is described in chapter 7.

1.5 Boundaries of the research

For the building of the framework the contents of environmental reports are taken as an axiom. No research is performed on the development of the contents of environmental reports.

The building of the framework is restricted to the theory of auditing environmental reports, including the planning, the audit process and reporting. Although it is mentioned in general, no specific attention is paid to the theory of the auditor or the theory of the market of auditing.

Eventually the objective of the audit of the environmental report will be to express an opinion on the true and fair view of the environmental performance. For environmental reports this objective can be further divided into:

- the relevance of the (quantitative and qualitative) information provided;
- the reliability of the information provided in the environmental report, including the acceptability of the methods used to collect, process and consolidate the data and the assumptions made during this process;
- the sufficient and balanced presentation of the information provided.

The empirical research in the audit process, however, is restricted to the audit objective on the reliability of the information provided. In order to evaluate the relevance and adequate presentation of the information provided in environmental reports, the auditor needs certain audit criteria. For financial statements, for example, the International Accounting Standards are used. For environmental reporting so far no such detailed guidelines or standards exist. During the research for this thesis there was still substantial discussion on the kind of information and the quality of information to be provided in environmental reports. The usually quite technical environmental information in environmental reports is difficult to understand for the average user, especially when no explanation is provided. As such the information does not contribute to the users' understanding of the environmental performance of the company. This kind of information is therefore insufficient. How information should be presented in order to contribute to the understanding of users and not being regarded as loose data is not clear yet. Using environmental performance indicators,

whether or not linked to financial data, is mentioned as one of the possibilities. Studies in this area are still ongoing. It is for this reason that the empirical research on the audit process is limited to the audit objective of reliability of the quantitative data provided in the environmental report. In practice, evaluating the reliability of the data is also the first objective that is evaluated during the audit process aimed at gathering evidence for the purpose of being able to express an opinion on the true and fair view of environmental performance. The relevance and adequate presentation of information provided is evaluated at a later stage in the audit process.

The audit objective in relation to the reliability of the data presented in environmental reports can be further divided into:

- Completeness: all relevant data is disclosed on each item;
- Accuracy: environmental performance data is included in the environmental report using the correct quantities;
- Timeliness: the environmental performance data is included in the environmental report in time, in the correct period (matching);
- Occurrence: an event, e.g. waste production, emissions and discharges took place during the period reported upon;
- Existence: environmental policies, targets, measures implemented and internal controls exist during the reporting period as described in the notes to the environmental data;
- Rights and obligations: rights and obligations pertain to the entity at a given date;
- Acceptability: methods used and assumptions made are acceptable, the measurements and sample analyses have been conducted and estimates arrived at in an acceptable manner; the methods for measurement, analysis and estimation methods are consistent. The selection of indicators to express the company's environmental performance is acceptable.

The following steps can be distinguished in the audit judgement process in relation to the reliability of the data:

1. Judgement on the design and existence of the environmental information system and internal control in relation to the reliability of information. During this judgement process the auditability of the information is also evaluated;
2. Judgement on the functioning of the environmental information system and internal control in relation to the reliability of the data. This judgement process evaluates whether the environmental information system provides a fair and reasonable view of the underlying situation;
3. Judgement on the data in the environmental report.
This judgement process evaluates the relation between the environmental information system and the environmental report.

The empirical research for this thesis in regard to the judgement process focuses on the exploration stage of the audit and in particular on the judgement process in

relation to the design and existence of the environmental information system and internal control in relation to reliable information. The environmental information system is part of the environmental management system. Not every environmental management system however has an environmental information system. Although companies record environmental impacts, such systems may not always be considered environmental information systems. An environmental information system can be defined as:

the series of tasks, records and instruments of an entity by which environmental data are systematically generated, documented and processed for the purpose of providing environmental information as required, e.g. for decision making or accountability purposes. Such systems identify, analyse, calculate, classify, record, and summarise environmental data, including data on environmental impacts of processes, products and services sold.

Although the environmental management system is briefly explained, in this thesis the main focus is on the environmental information system.

In this thesis no preference is expressed as to who should perform the audit of environmental reports. The quality of the work performed by the auditor or (multidisciplinary) audit team and the clear expression of the conclusions of the audit are considered to be of greater importance. The market will eventually decide who will be best to perform the audit of environmental reports.

In each of the following chapters the research method and inherent restrictions of the research approach are explained in more detail.

1.6 Definitions

There is much confusion relating to definitions. In the environmental field, auditing for instance is used for an audit of the environmental management system, while verification is used for the audit of the environmental report. In the International Standards on Auditing the term “auditing” is not defined, only the purpose of auditing is described. CICA (1992) in its research report “Environmental Auditing and the role of the Accounting Profession” identified twelve different definitions of auditing. In their research report they use the definition of the American Accounting Association (AAA) as defined in 1973 in their “Statement of Basic Auditing Concepts”:

“Auditing is a systematic process of objectively obtaining and evaluating evidence regarding assertions about economic actions and events to ascertain the degree of correspondence between those assertions and established criteria and communicating the results to the interested users.”

The International Organisation for Standardisation (ISO) has clearly ‘borrowed’ this definition in defining environmental audit (ISO, 1996b, ISO 14010, Guidelines for environmental auditing-general principles).

They define environmental audit as:

“systematic, documented verification process of objectively obtaining and evaluating audit evidence to determine whether specified environmental activities, events, conditions, management systems, or information about these matters conform with audit criteria, and communicating the results of this process to the client.”

Important differences between the respective definitions given by AAA and ISO are: The starting point of AAA is the assertions about a certain subject matter, while the starting point of ISO is the subject matter itself or information about the subject matter, which perhaps could also be assertions;

ISO emphasises the documentation of the process. In all standards issued by ISO the documentation of procedures and resulting activities and findings is very relevant; ISO uses ‘verification process’. In the definition it appears that the term ‘audit’ has a meaning similar to that of verification. Verification, as will be explained in chapter 3, is only a part of the audit process. Auditing is both evaluation and verification. In ISO two parties are involved, the auditee issuing the engagement and the environmental auditor performing the environmental audit. In the definition of AAA three different parties are involved. The third party consists of everybody (internal or external to the entity) interested in the actions and events in question and therefore also in information about them and who seek some degree of independent assurance about the reliability of that information.

Although the definition of AAA is quite general, by using the wording “economic” the impression is given that the definition is too closely related to a more financially orientated audit.

In this thesis, it is my conviction that a more general definition is required.

Auditing: the systematic process of objectively obtaining and evaluating evidence regarding the degree of correspondence between a specific subject matter and agreed audit criteria and communicating the results to the users.

Auditor: a person who is independent and competent in a specific domain, who has met the criteria laid down in national law or other established criteria.

Audit criteria: policies, practices, procedures or requirements against which the auditor compares collected evidence about the subject matter.

Audit report: a written communication in which the auditor or team of auditors may describe the subject matter of the audit, the objective of the audit, the audit criteria used, the audit work performed, the inherent and specific limitations of the audit and their opinion on the subject matter.

Based on the definition provided above, auditing provides more than a simple ‘verification’ of published data. The subject matter of the audit can for instance be the environmental management system with the audit objective being the effectiveness of this system. Professional judgement is of cardinal importance, whereas independence and expertise are the two foundations of this judgement.

Auditing is performed from a certain domain in the sense of a discipline. The domain reveals the inherent limitations of the opinion since it is not possible to be an expert in all disciplines.

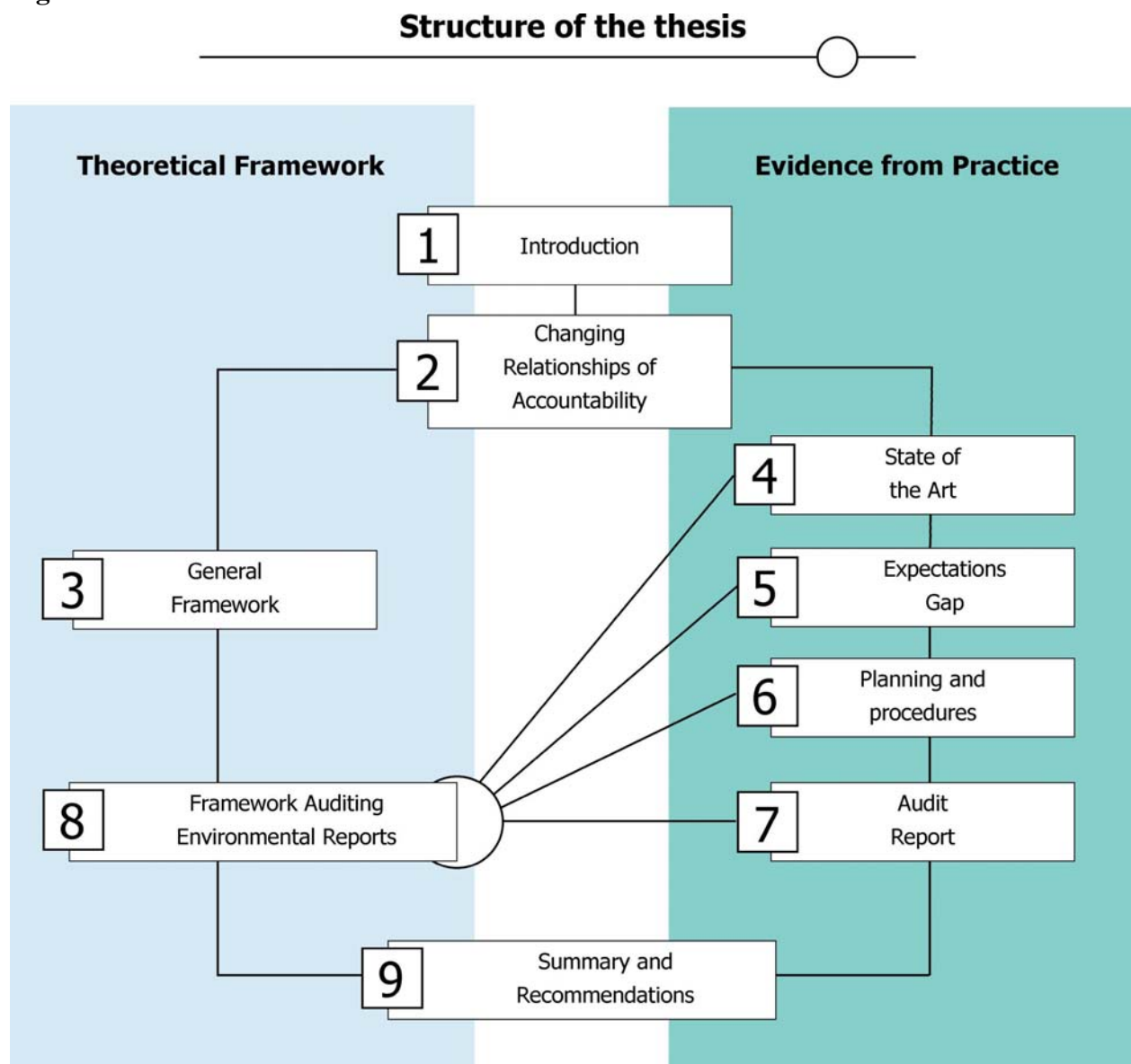
In this thesis, auditing is used as a generic term and no reference is made to the engagement of providing a high level of assurance on financial statements. However, it may be argued that audit engagements should always aim at the highest level of assurance that reasonably can be provided. It is very confusing that, in practice, engagements that result in providing assurance have so many different names, such as audit, verification, validation and certification. In addition, in this thesis, environmental auditing is not used to refer to the internal audit of the environmental management system only. It refers to all kind of audits that can be performed from the environmental domain.

The concept of auditing is explained further in chapter 3.

1.7 Structure of the thesis

The thesis comprises three sections. The first section describes the development of a generic framework of auditing derived from philosophies on the audit of financial statements. The section ends with a framework for auditing in general. The second section describes the evidence from practice on auditing environmental reports. The third part describes the development of the framework for auditing environmental reports based on literature, logic and practical experience. Figure 1.2 provides an overview of the structure of the chapters in this thesis.

Figure 1.2



Chapter 2 describes the changes in accountability and more specifically the subject matter of the domain, being environmental reporting and environmental management systems. Chapter 3 describes the development of a framework for auditing in general. Chapter 4 describes the audit of environmental reports as performed in practice. Chapter 5 provides some insight into the existence of an expectations gap in relation to the audit of environmental reports. Chapter 6 describes the results of research in the planning of the audit of environmental reports. It explains what kinds of considerations are important during this process. Because the system of internal control is very important during this stage, first the results of a case study into elements of internal control within environmental management systems are described. The research results on the planning of the audit of environmental reports also provide an insight into the kind of procedures that will be performed during an audit of

environmental reports. Chapter 7 assesses the quality of reporting the audit judgement and identifies examples of 'best practice'. Chapter 8 describes the framework for auditing environmental reports. Finally, chapter 9 provides a summary of the conclusions, considerations and recommendations for future research.

Chapter 2 Environmental auditing within the widening scope of corporate accountability

2.1 Introduction

Relationships of accountability are changing and this is influencing the need for auditing. For financial accounting the need for auditing arose when ownership and management of assets were separated. Record-keeping of transactions already existed in the first complex societies, which emerged in Eurasia during the fourth millennium BC (ICAS, 1994). Regional trading centres and cities were established in which goods were collected, allocated and redistributed under the aegis of the state apparatus. In due course the increased scale of commerce and government produced more sophisticated means of exchange, recording techniques and bookkeeping, particularly by banks, estate owners and tax authorities. In medieval Europe under the feudal monarchies, the development of more sophisticated charge and discharge accounting was encouraged due to the separation of ownership and estate management. This created a need for auditing in order to regularly check the agent's management. Also the need to monitor and control revenues payable to the government (tax) encouraged bookkeeping and auditing. Industrialisation eventually not only increased the demand for various kinds of accounting, but also changed the structure of social relations, which encouraged the formation of professional organisations¹¹. It was at that time that the professionalisation of accountancy took place. The depression, bankruptcies and cases of fraud increased the need for independently audited information.

Auditing apparently is closely related to supervision and trust. How this supervision is given substance is largely dependent on the model of corporate governance. This also influences to whom the auditor has to report his/her conclusions. The content of environmental reporting will be influenced by how the organisation perceives the relationship of responsibility to society. In order to put auditing of environmental reports in its adequate context, the concepts of relationships of responsibility, corporate governance, accountability and internal control are briefly discussed. These concepts largely influence the subject matter of the audit and the function of audit. The nature of what is considered to be responsibility is continually changing and developing. If we can see society as a social system which is determined by a whole complex of social relationships which bring them continually developing and changing rights, responsibilities and accountability and if we consider active democracy as the appropriate moral basis upon which to organise society, then we can

¹¹ The term companies is intended to include not only private companies, but also public companies and institutions or non-financial organisations.

identify a complex of information flows -actual and potential- which do define and can be developed to refine society in which we live (Gray et al., 1996). One of them is the environmental report. In this “accountability” refers to the wider accountability by organisations to society, where society is seen as pluralist, being made up of different actors or stakeholder groups, each of which wishes for, and has democratic rights to, information.

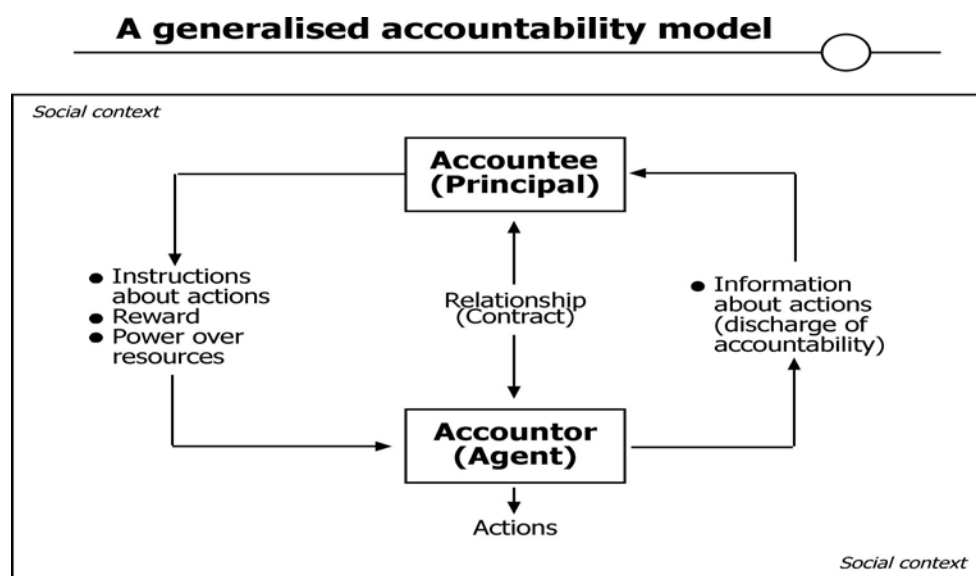
Paragraph 2.2 describes the concept of accountability and major changes in practice, paragraph 2.3 discusses the relation between corporate governance and accountability, paragraph 2.4 describes accountability by means of environmental reporting , paragraph 2.5 describes environmental management systems as part of internal control and finally paragraph 2.6 describes developments in environmental auditing. The chapter ends with paragraph 2.7, which gives some conclusions on accountability and audit.

2.2 Accountability

Accountability can be defined as: *the duty to provide an account (by no means necessarily a financial account) or reckoning of those actions for which one is held responsible* (Gray et al., 1997).

Thus accountability involves two responsibilities or duties: the responsibility to undertake certain actions (or forbear from taking actions) and the responsibility to provide an account of those actions (see figure 2.1).

Figure 2.1



Source: Gray et al., 1996 p. 39

The concept of corporate accountability has several roots and ramifications (Benston, 1982). An important basis for the concept is the idea of organisational legitimacy. An organisation receives its permission to operate from society and is ultimately accountable to society for what it does and how it does it. Another root of the corporate accountability concept is equity or fairness, derived from the assumption that corporations are managed in ways that damage people who are unable to protect themselves. Disclosure is often proposed as an alternative to the presumably worse effects of direct government regulation (Benston, 1982).

Society may be thought of as sets of relationships (Gray et al., 1997). These relationships which are even referred to as social contracts (Gray et al., 1996) provide the basis for the rights of the parties in that relationship - including the rights and responsibilities relating to information flows. Gray et al. (1996, 1995) distinguish between the following levels of relationships:

- rights and responsibilities established in law. They are most obvious, but they only lay down the minimum level of responsibilities and rights and thus the minimum level of legal accountability at any given time in any given country;
- quasi-legal rights and responsibilities. These are enshrined in codes of conduct, statements from authoritative bodies to whom the organisations subscribe (e.g. International Chamber of Commerce, United Nations) plus other 'semi-binding agreements' such as mission statements, statements in speeches from chief executives or statements of objectives. In effect, a contract is established by an authoritative body, by an organisation to which the 'accountable' organisation subscribes or by the 'accountable' organisation itself;
- philosophical rights and responsibilities. They are the most tricky but probably the most important. These relate to rights and responsibilities that are not enshrined in statute or other forms of authority or agreement but which nevertheless may be thought to exist in principle.

As organisations became more and more a social phenomenon, more stakeholders than just the financial stakeholders became involved in the relationship (Berendsen, 1990; Gray et al., 1993). Examples of such stakeholders are employees, local community and environmental pressure groups. All these different stakeholders are interested in the organisation's activities in relation to certain aspects and want to be informed about the organisation's policy, management and results in relation to these aspects. The need for auditing different subject matters besides just financial information exists because of the changing relationships of accountability:

- Other kinds of stakeholders become interested in organisations and the implications of their activities and as such set out requirements for the organisation;
- The scope of accountability is changing:

- Organisations may have to account for impacts caused by their activities in relation to more different domains;
- Organisations may have to account for the impacts caused by their activities within a broader scope, not only for impacts caused by their production or services provided, but also for the impacts as a result of the inputs used and the ultimate impacts of the products produced or the services provided. This may include impacts caused by different entities that are related to the organisation, such as suppliers and customers.

Other kinds of stakeholders become interested in the organisation's activities, because they are increasingly aware that the organisation's activities may be of influence on their individual or in general on society's well-being. Organisations are therefore faced with demands from other kinds of stakeholder groups. The demands imposed on organisations may vary in authority. There may be legal requirements, but for instance also requirements set by customers or local communities/neighbouring parties. It will depend on the power of each stakeholder group to what extent the organisation will meet their requirements. Traditionally, accounting has attempted to restrict itself to a consideration of the relationships between organisations and a very restricted set of stakeholders (typically investors and other providers of finance) within a strictly economic domain (Gray et al., 1997). Distribution of information is related to distributions of influence. Providing information to only a very restricted set of (financial) stakeholders and ignoring other stakeholder groups leads to an uneven distribution of information that can to a considerable degree be taken as reflecting an uneven distribution of power. Accountability however should be a result of participatory democracy (Gray et al., 1997). In a participatory democracy there must be flows of information in which those controlling the resources provide accounts to society of their use of those resources. This means that the information needs of all stakeholder groups are taken into account.

2.3 Accountability as part of corporate governance

Corporate governance has been defined as the system by which companies are directed and controlled (Cadbury, 1992). More specifically, it is how these persons provide stewardship over the business of an entity to achieve corporate objectives, balance the objectives with the expectations of society, and provide appropriate accountability to all of the entity stakeholders. It is concerned with the exercise of power over corporate entities (Tricker, 2000). Moreover, it is this system, or structure, which specifies the distribution of rights and responsibilities among a company's different participants such as its management, board, shareholders and other stakeholders. Transparency and accountability are seen as the major attributes of corporate governance (Wetherell, 1999).

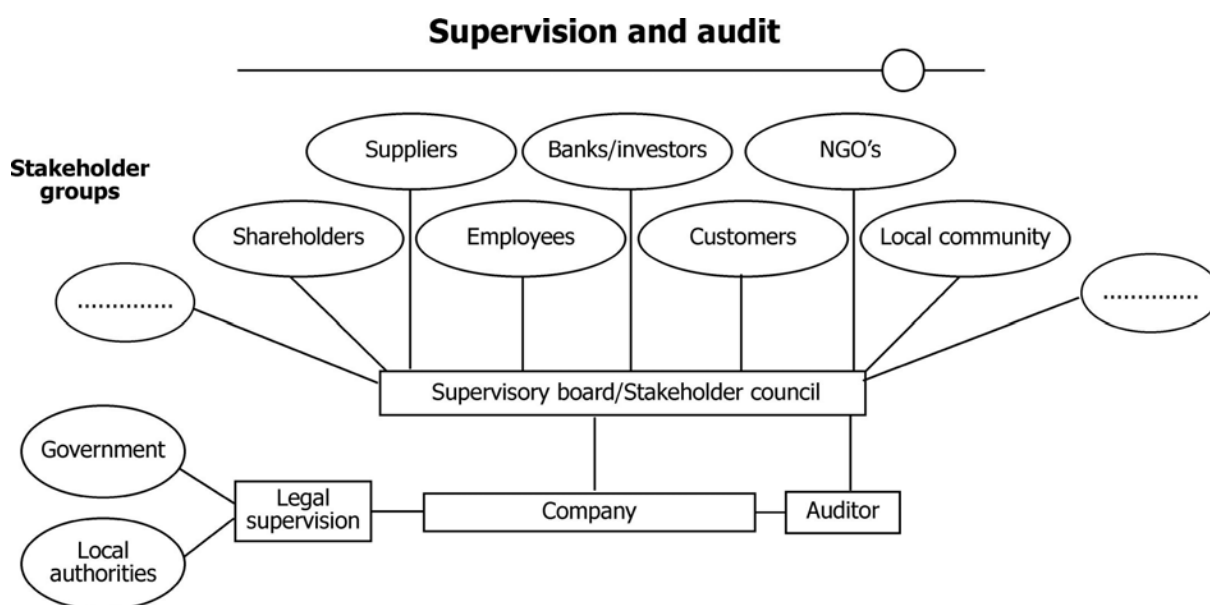
Primarily, corporate governance focuses on the supervisory and accountability aspects of organisations within and to (sections of) society. The extent to which ethics and morality play a role in defining the corporate governance agenda is thus a matter of conjecture. Much of the focus of the debate over the past decade in relation to corporate governance issues has been concerned with protecting the interests of shareholders. In this context, ethics and morality are important only to the extent that they are seen as important to the creation of wealth for shareholders. There are of course other models of corporate governance. Turnbull (1997) describes, amongst others, the stakeholder model. Under the stakeholder model, the firm is perceived as a collection of stakeholders operating within the larger system of the host society. Importantly, it is that larger society which provides the necessary legal and market infrastructure for the firm's activities. The purpose of the firm is to create wealth or value for its stakeholders by converting their stakes into goods and services. Control of the firm is likewise shared between investors and the other stakeholders through multiple boards, a prime function of which is settling conflicts of interest. This stakeholder model of corporate governance is of growing interest now that perceptions on responsibilities of companies are changing. Roussey (2000) refers more explicitly to corporate governance as being the ethical corporate behaviour by directors and others charged with governance in the creation of *wealth* for *all* stakeholders. Profit seems to be no longer the primary focus. A recent development is to place the corporate governance stewardship responsibilities more and more on the non-executive members of the board (Roussey, 2000). These persons are more independent from day-to-day operations of the entities and are the true representatives of the stakeholders. The changes in corporate governance structure reflect the changes mentioned above in responsibilities of organisations.

Figure 2.2 shows the relationship between supervision and audit.

Because of the changes in corporate governance in my opinion the supervisory boards should no longer focus on the shareholders, but should include representatives of all stakeholder groups.

The function of the supervisory board is quite comprehensive. The supervising function comprises not only forming an opinion on the organisation's policy and performance, but can also include interference and initiating necessary adjustments. The supervisory board must monitor all activities, including reporting to stakeholders, in principle. The increasing broadening of reporting and the complexity of information processes make it necessary for the supervisory board to ask for technical assistance. The function of auditor therefore came into being from the supervising function (Wilschut, 1998). Auditing therefore is only part of supervision. The model that is used to conceptualize corporate governance, influences the role the auditor has within society. In the stakeholder model, society in fact is the true provider of engagements to auditors.

Figure 2.2



Environmental reporting and environmental management systems form important elements of corporate governance. Therefore, these concepts are further explained in the next paragraphs.

2.4 Environmental reporting

Environmental reporting is very diverse (KPMG, 1993a,b; 1995a,b; 1996; 1997a,b, c; 1998a,b; 1999 a,b). Also, there are no generally accepted standards for environmental reporting yet. The recently developed reporting guidelines for reporting on economic, environmental and social performance of Global Reporting Initiative (2000) are probably the most elaborate. The variety in the contents of the environmental report may exist due to the following reasons:

- differences in the stage in which the entity is in relation to environmental reporting;
- differences in the topics that are reported upon due to differences in environmental aspects related to the entity's processes, products or services;
- differences in the level within the organisation at which the reporting takes place:
 - at site level;
 - at business unit/group level;
 - at corporate level;
- differences in the scope of reporting:
 - processes;
 - processes and products;
 - geographical areas;

- differences in the extent to which the report is integrated with other kinds of reporting, such as health and safety, social or financial.

In addition to the differences in the contents, there may be differences in the quality of the environmental report. Research by UNEP (1997) and KMPG (1999a) show that both the quantity and the quality are increasing. Deloitte& Touche (1993) introduced a five-stage model to show the stage of the Company Environmental reporting (CER). UNEP and SustainAbility (1997) revised this model. Figure 2.3 provides an overview of this revised five-stage CER model.

As the graph shows in the different stages there is not only an evolution in the contents of the report, but also in communication with stakeholders. As the company becomes more mature in company environmental reporting it will more actively engage with its stakeholders.

Different approaches exist as to how to decide on the contents of the environmental report. It also depends on the concept that is used for the accountability relationship. Decision usefulness theories have dominated accounting thought in recent decades. However, this describes what is useful, but hardly what might ideally be included. Stakeholders have a right to information. Whether or not they use it and if so what for is largely irrelevant (Gray et al., 1996).

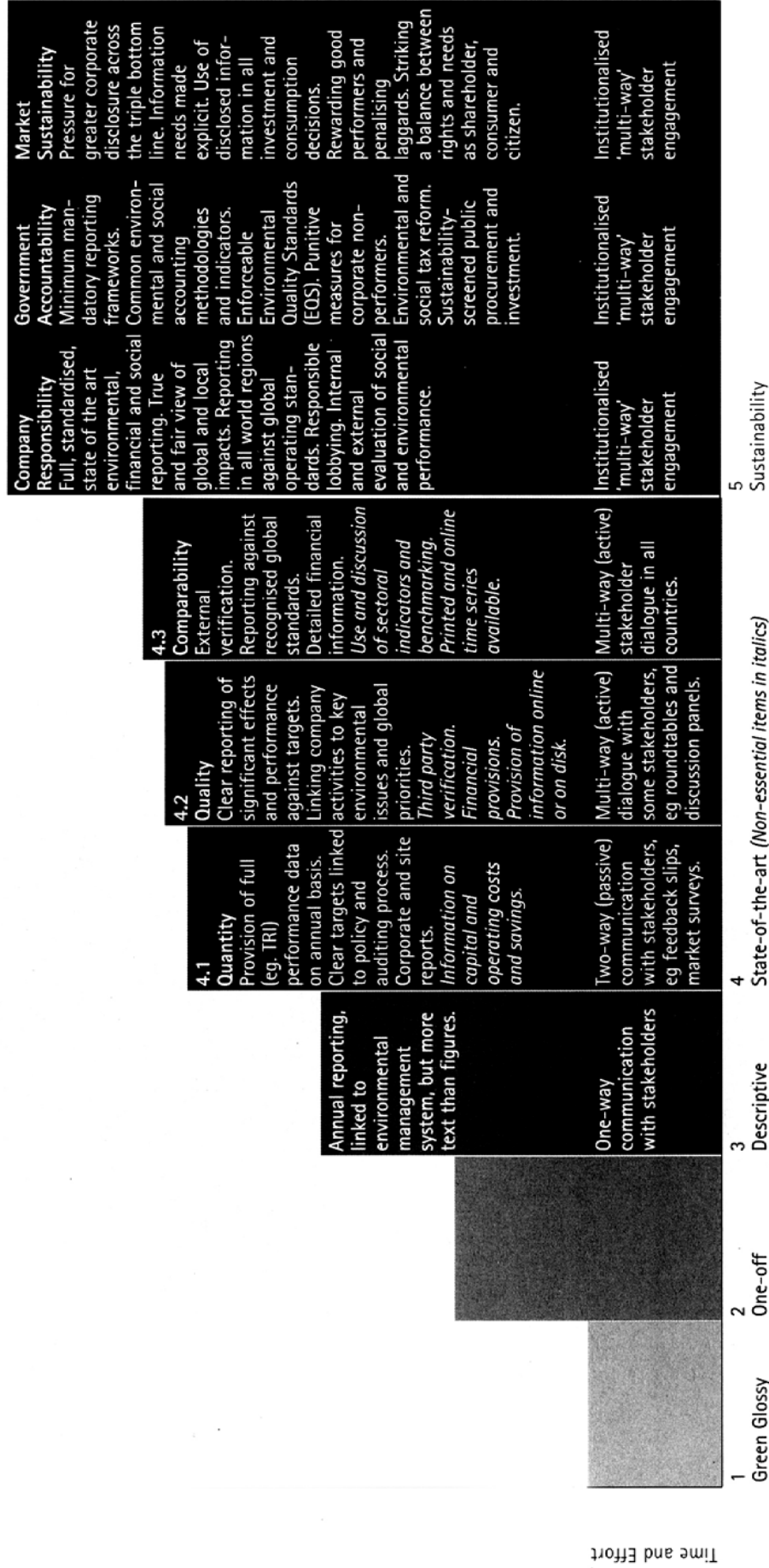
The most frequent perspective employed in environmental reporting is the standpoint of accountability and transparency (Gray et al. 1997). Such a view is predicated upon the rights to information that exist in a democracy and argues for an increase of transparency of the organisations, which control and determine our futures. Empirical rights to information that is established through law and regulations are easy to identify. According to Gray (1998), the problem with this is that currently enforceable legal accountability is a heavily biased subset of all the moral responsibilities, which should entail an associated accountability. The law however does not yet endorse much information to which society has a right. In Gray's view, the state has little or no incentive to legislate in ways that will challenge its legitimacy and the free working of capital. Conventional accounting in his view supports the dominant (undemocratic) hegemony of the status quo. Another approach is to undertake a stakeholder analysis (Gray et al., 1996). This approach identifies who influences and/or is influenced by the organisation. From this, one can specify all relationships that these stakeholders share with the organisation (stakeholder theory). From a democratic accountability point of view, all these relationships carry with them potential rights to information. The problem remains how to prioritise these relationships and the reluctance of the organisation to discharge the accountability (and the state to legally require such accountability). Information is a major element that can be employed by the organisation to manage (or manipulate) the stakeholders in order to gain their support and approval, or to distract their opposition and disapproval. Therefore, a different approach may be necessary. In the polyvocal

citizenship view, representatives of stakeholder groups actually engage in the accounting and reporting process.

Although stakeholders have a right to environmental information (EC, 1990), the contents of environmental reporting may be dominated by legitimacy purposes. Organisations can only continue to exist if the society in which they are based perceive the organisation to be operating to a value system which is commensurate with the society's own value system. The legitimacy of organisations is threatened whenever the 'relevant public's' expectations of performance of the organisation are in conflict with the actual performance of the organisation. The legitimacy theory provides the view that organisations use particular disclosure strategies to shape community perceptions about the organisation's operations, the aim being to maintain or establish the view that the organisation's operations are in accord with community expectations (in terms with the social contract). The ability to shape perceptions through report disclosures however is only possible if members of society actually use the reported information. Since the bounds and norms of society constantly change, the content of environmental reporting will likewise change. Organisations are expected to operate within the bounds and norms defined by society (Brown and Deegan, 1998).

The process of legitimation can be related to the accounting process. Patten (1992) conducted an event study incorporating legitimacy theory. Patten focused on the change in the extent of environmental disclosures made by the American oil companies, other than Exxon Oil Company, both before and after the Exxon Valdez incident in Alaska in 1989. He argued that if the Alaskan oil spill resulted in a threat to legitimacy of the petroleum industry, that industry would respond by increasing the amount of environmental disclosures in its annual reports. Patten's results indicate that there were increased environmental disclosures by the petroleum companies for the post-1989 period, consistent with the legitimation perspective. This disclosure reaction took place across the industry, even though the incident itself was primarily related to one Oil Company. Research results from this longitudinal study showed that in six of the nine industries there was a significant correlation between the levels of media attention and the quantity of corporate environmental disclosures. In five of the nine industries, there was a significant correlation between the levels of negative media attention and the quantity of positive corporate environmental disclosure.

Figure 2.3



The revised five stage CER

Source: UNEP, 1997

The European Union stimulates environmental reporting via the EU-Regulation “Eco-Management and Audit Scheme” (EMAS). EMAS is open for company participation since April 1995. The overall objective of this regulation is to promote continuous environmental performance improvements within industry by committing sites to implement an environmental management system and publish an environmental report. Compliance with EMAS is voluntary. If organisations decide to participate, an independent, accredited verifier reviews and assesses the environmental management system and the environmental report. The Board of Accreditation within each EU-country accredits the verifier.

In the Netherlands, environmental reporting is mandatory for the larger polluting sites (about 260). Companies have to publish two environmental reports, one for the government and one for society in general. No detailed requirements exist for the content of the environmental report that is published on behalf of society. The audit of these data is not yet obligatory in order to give companies the opportunity to become more experienced in publishing environmental data. In addition, the required skills for auditing these environmental data are not yet available. According to the explanatory memorandum of the bill, receiving reliable information from companies about the implications of firms' activities for the environment is a necessary condition for good mutual communication between citizens and companies. Citizens need reliable information in order to make the right decisions (Eerste Kamer der Staten-Generaal, 1997).

Although the contents of environmental reports may vary, in general they include some combination of the following information (FEE, 1999b):

- a) a description of the entity and its relationship to any parent organisation, and a summary of its activities;
- b) the entity's environmental policy;
- c) the entity's environmental management system;
- d) a summary of the entity's environmental impacts, with any necessary explanation of their nature;
- e) the environmental objectives and targets in relation to significant environmental impacts;
- f) a summary of performance against environmental objectives and targets for all significant environmental impacts and, where available, comparison of performance against regulatory limits and industry-sector standards; and
- g) other factors regarding environmental performance, such as fines and penalties.

In relation to performance information, a distinction can be made between information that is generally applicable to all organisations, industry specific information and company specific information.

Eventually the contents of environmental reports will be extended to include social and economic information. Globally, the GRI¹² (GRI, 2000) is developing guidelines for sustainability reports that review economic, social and environmental performance. The guidelines are set through a dialogue between companies, stakeholders and auditors and are supported by the United Nations. It is the intention to update these guidelines every two years.

In this thesis the contents of environmental reporting are not investigated. The development of the framework for auditing environmental reports in this thesis focuses on the quantitative environmental performance information. The development of the contents of environmental reporting provides enough scope for research in other theses¹³.

2.5 Internal control and environmental management

In addition to transparency through reporting, internal control forms an important element of corporate governance. Environmental management introduces a new dimension to internal control and information systems. Hazardous substances in general have no value and in fact involve the company in additional costs. Traditionally information systems and related internal control structures implemented at many businesses are not designed for controlling these substances with their 'negative' value. The natural conflict of interest for instance, based on the positive value of goods, is lacking. To remedy this problem, internal responsibilities and duties regarding the environmental impact of hazardous activities and their registration should be clearly defined. It is important that employees involved know that they are held accountable for any incomplete registration. Internal procedures and regulations should provide sufficient safeguards for complete registration of environmentally hazardous substances including waste at all stages of the production process. The methods therefore have to be adapted (Blokdijsk and Drieënhuizen, 1992; Blokdijsk et al., 1992). The reconciliation between the consumption and raw materials and consumables and the production of waste will never be perfect: conversion factors in the production process may vary depending on circumstances such as temperature or humidity (Blokdijsk and Drieënhuizen, 1992). Substances that do not have a clear relation to goods that have a positive value require a comprehensive process of recording and internal control so that recording of these substances is accurate and complete.

The framework of internal control as developed by the Committee of Sponsoring Organisations of the Treadway Commission (COSO, 1994) forms the basis for the current International Standards of Auditing.

¹² See for a more elaborate discussion Kamp-Roelands, A.E.M. (2000) and Kamp-Roelands, A.E.M. en C.Hibbitt (2000)

¹³ See for example Hibbitt, C., Longitudinal Study of Corporate Environmental Disclosures by European Companies, Free University: Amsterdam, (doctoral thesis), forthcoming.

Internal control is defined as (COSO, 1994):

A process, effected by an entity's board of directors, management and other personnel, designed to provide reasonable assurance regarding the achievement of objectives in the following categories:

- * effectiveness and efficiency of operations;*
- * reliability of financial reporting; and*
- * compliance with applicable laws and regulations.*

The first category addresses an entity's basic business objectives, including performance and profitability goals and safeguarding resources. Internal control systems operate at different levels of effectiveness.

Internal control as described by COSO (1994) does not follow the management process but it divides internal control into five interrelated components. The internal control is based on the processes and activities of the organisation. The five components are (COSO, 1994):

1. Control environment: actions, policies, and procedures that reflect the overall attitude of top management, directors and owners of a company to control and its importance. Control environmental factors include the integrity, ethical values and competence of the company's people; management philosophy and operating style; the way management assigns authority and responsibility and organises and develops its people; and the attention and direction provided by the board of directors;
2. Risk assessment: the identification and analysis of relevant risk to achievement of the objectives, forming a basis for determining how the risks should be managed. The process of identifying and analysing risk is an ongoing iterative process and is a critical component of an effective internal control system. Risk can occur because of internal and external factors.
3. Control activities: control activities are the policies and procedures that help to ensure that management directives are carried out and that necessary actions are taken to address risks to achievement of the company's objectives. Control activities occur throughout the organisation at all levels in all functions. They include a wide range of activities as diverse as approvals, authorisations, verifications, reconciliation, reviews of operating performance, security of assets and segregation of duties. The mix of control activities implemented is of importance, one control activity will never be sufficient. Preventive controls always need detective controls.
4. Information and communication: the purpose of an information system is to provide information in order to make decisions, on behalf of the performance of operations, on behalf of controlling processes and in order to account for assigned responsibilities. The information system identifies, assembles, classifies, analyses, records and reports transactions. Furthermore the information should satisfy the needs of the users and the information system should be as efficient as possible. Communication, both formal and informal, is very important and is closely related to the control environment. It

also serves as input for the risk assessment. Communication plays an important role in the attitude towards internal control.

5. **Monitoring:** monitoring activities deal with ongoing or periodic assessment of the quality of internal control performance by management to determine that controls are operating as intended and that they are modified as appropriate for changes in conditions.

Although managing environmental issues could be incorporated in this COSO framework, the International Organization for Standardization (ISO) has developed a separate standard for environmental management systems (ISO 1996 a) rather than implementing it in existing frameworks. This ISO standard is less detailed than the COSO framework, but enables certification of environmental management systems against this standard. An environmental management system is described as (ISO, 1996a):

The part of the overall management system which includes organisational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy.

The implementation of an environmental management system as described in the standard provides a structured process for achieving continual improvement. The standard is based on the concept that the organisation will periodically review and evaluate its environmental management system in order to identify opportunities for improvement and their implementation. Improvements in its environmental management system are intended to result in additional improvements in environmental performance. The rate and extent of the continual improvement will be determined by the organisation itself. The standard can be implemented in the entire organisation, specific operating units or activities of the organisation.

The ISO standard follows the management process and is focused on requirements in relation to procedures that have to be implemented and maintained. It distinguishes between the following components (ISO, 1996a):

1. **Environmental policy**
The environmental policy is appropriate to the nature, scale and environmental impacts of the organisation's activities, products or services, includes a commitment to continual improvement and prevention of pollution and a commitment to comply with relevant environmental legislation, regulations and other requirements to which the organisation subscribes. Further, the environmental policy should be documented, implemented and maintained and communicated to all employees and be available to the public;
2. **Planning**
The organisation has to establish and maintain procedures to identify the environmental aspects of its activities, products or services that it can control or over which it can be expected to have an influence in order to determine those which have

or can have significant impacts on the environment. Further, the organisation has to implement procedures to identify applicable legal and other requirements. For the achievement of the objectives and targets the organisation has to establish and maintain environmental management programmes which include the designation of responsibilities for achieving the objectives and the time-frame in which they are to be achieved;

3. Implementation and operation

The organisation should implement procedures in relation to roles, responsibility and authorities to facilitate effective environmental management. In addition, procedures in relation to training, awareness and competence have to be implemented. In relation to communication, the organisation should have procedures for internal communication and for receiving, documenting and responding to relevant communication from external interested parties. The environmental management system should further be documented and the organisation has to implement procedures for document control of all documents mentioned in the standard. Activities with significant environmental aspects have to be controlled through procedures. Finally, procedures in relation to accident and emergency situations have to be in place;

4. Checking and corrective action

The organisation should establish and maintain procedures to monitor and measure the key characteristics of its operations and activities that can have a significant impact on the environment. In addition, responsibilities and authority should be defined for non-compliance and taking action to mitigate any impacts caused. Also, procedures for identification, maintenance and disposal of environmental records should be established and maintained. The organisation should perform environmental management system audits;

5. Management review

The organisation's top management should review the environmental management system to ensure its continuing suitability, adequacy and effectiveness.

The (financial) internal control system and the environmental management system display certain similarities (Kamp-Roelands & Bouma, 1998). Table 2.1 shows the main similarities between the framework of COSO for (financial) internal control and ISO 14001 for environmental management systems.

Table 2.1 - Similarities between COSO and ISO 14001

1.	Both are focused on the control of processes
2.	Both are based on the regulator principle 'plan-do-check-act' from cybernetics (also referred to as Deming cycle)
3.	Both perceive the attitude, competence and commitment of management and employees as the basis of control
4.	Both acknowledge that regular monitoring of the system is indispensable

Source: Kamp-Roelands & Bouma, 1998 (translated)

An overview of the main differences between a system of internal control under COSO and an environmental management system under ISO 14001 is provided in Table 2.2 below.

Table 2.2 - Differences between COSO and ISO 14001

Object	IC-System COSO	EMS ISO 14001
Objectives	Providing reasonable assurance regarding the achievement of objectives in the following categories: <ul style="list-style-type: none"> - Effectiveness and efficiency of operations; - Reliability of financial reporting; - Compliance with applicable laws and regulations. 	<ul style="list-style-type: none"> - Support environmental protection and prevention of pollution in line with socio-economic needs; - Continual improvement and prevention of pollution; - Compliance with relevant environmental legislation and regulations and with other requirements to which the organisation subscribes
Status	Recommendation	Standard
Scope	Corporate level	Site level
Management process	Does not describe the parts in which decisions are taken by management	Describes all parts of the management process
Control environment	Emphasis on both integrity and competence	Emphasis on competence
Risk-identification and analysis	Risk analysis focused on an effective and efficient choice of internal control activities	Risk-identification on behalf of setting environmental objectives
IC-activities	Emphasis on the reliability of the information process Describes potential risks and examples of internal control activities in detail	Emphasis on improvement of environmental performance through operational control Describes only the procedures to implement and not the measures that have to be taken
Information and communication	Describes the whole information process	Emphasis on primary registrations and document control
Certification	Not (yet) performed	ISO 14001 certifications are performed

Source: Kamp-Roelands & Bouma (1998), translated

The main difference between these two frameworks relates to their status (Kamp-Roelands & Bouma, 1998). Whereas ISO 14001 is a standard against which a company's environmental management can be certified, COSO is only a recommendation. Moreover, the COSO framework allows much greater scope for 'professional judgement'.

Indeed, COSO provides considerable guidance on the potential risks associated with various processes and activities, together with examples of internal control activities that can be

implemented to control these risks. ISO 14001 on the other hand, is quite brief, describing what should be done (i.e. the procedures) but does not provide any examples of how these procedures should be performed.

In practice, the provision of reliable information tends to be assumed rather than being elaborated within an organisation's framework for environmental management systems. A major difference between COSO and ISO is the lack of attention given in ISO 14001 to the accounting process. In contrast to COSO, ISO 14001 does not list reliable information as one of the objectives of an EMS. Indeed, ISO 14001 provides only limited procedures in relation to the quality of environmental information that may be required by the various users of this information, including management.

For auditors of environmental reports the ISO 14001 certificate does seem to add much assurance. Additional internal control procedures have to be implemented. The accounting techniques and internal control procedures currently available are adequate for use in environmental management systems, but their application requires changes in emphasis (Blokdiik and Drieënhuizen, 1992; Kamp-Roelands and Bouma, 1998). In particular, more attention will have to be focused on three areas: the basic recording of environmentally hazardous substances as and when they occur (pollutant records); the internal procedures governing the storage and processing of hazardous substances; and the feasibility of segregating duties wherever possible (Blokdiik and Drieënhuizen, 1992).

2.6 Environmental auditing

Auditing as part of supervision is applied in many different ways, both internal and external, to organisations. Unfortunately, in practice environmental auditing most often refers to the audit of environmental management systems. Environmental auditing began with the voluntary environmental audits in the mid-to-late-1970's by several US companies as part of their environmental management. Due to litigation, the lead auditor of the team was often a lawyer. The guidance on environmental auditing evolved from guidance on internal environmental audits of the environmental management systems, to guidance on independent certification audits of the environmental management system to guidance on the EMAS verification that enhances both the environmental management system and the environmental report. No guidance existed in relation to voluntary audits of environmental reports that do not participate in the EMAS scheme. It was only since 1998 that IAPC took the initiative to develop guidance on the audit of environmental reports. In addition, only in the past few years more detailed guidance has been developed within audit firms themselves. Consultancy firms often have an approach that is based on an extended certification approach of environmental management systems.

A structured audit method can be described as (Akkresh et al., 1988): a systematic approach to auditing characterised by a prescribed, logical sequence of procedures, decisions, and documentation steps, and by a comprehensive and integrated set of audit policies and tools designed to assist the auditor in conducting the audit.

Environmental auditing is not limited to auditing environmental management systems, but covers a wide range of subject matters in the environmental field. Auditing environmental reports is part of environmental auditing. Frequently a descriptive word or phrase to indicate either the particular purpose of the audit or the subject matter of the audit or both modifies the term audit. In this thesis environmental auditing is described as:

the process of obtaining and evaluating evidence regarding the degree of correspondence between environmental policy, specified environmental operations, environmental management (systems), environmental performance or information about these matters and the agreed audit criteria and communicating the results to the users.

The subject matters in the definition are based on the aspects that according to Bins-Hoefnagels et al. (1986a,b) may be evaluated during an environmental audit:

- the environmental policy;
- the internal control measures;
- the way of operation; and
- the results of environmental performance.

The subject matter of environmental audit varies with the stage of development within the organisation. Piet (1996) distinguishes between the following four stages in environmental auditing:

1. Zero-audit

The zero-audit (in practice also referred to as initial environmental reviews or assessments) enhances an initial inventory of the environmental risks. During the audit the (potential) environmental risks in relation to the processes within the organisation, the input, throughput and output of substances are identified. Next, an inventory is made of the existing internal measures to control for these risks. As such an insight is gained into the remaining risks that need further control. Audit criteria are general environmental literature on effects and impacts, existing laws and regulations (including permits), and the organisation's internal requirements. The audit report is mainly addressed to the organisation's management and includes recommendations for improvement.

2. Environmental audit of the design of the environmental management system

This kind of environmental audit is intended to evaluate the sufficiency of the environmental-technical, legal and organisational measures taken to control the environmental risks. The audit report includes an opinion on these measures.

3. Environmental audit of the existence and operation of the environmental management system

This kind of operational audit compares the environmental management system within the organisation with the design of the environmental management system as documented. The audit report is a certification of the environmental management system.

4. Environmental audit of the quantitative results of the environmental policy and environmental management

The subject matter of the audit is the environmental report, being the reflection of the company's environmental performance. The audit report is addressed to anonymous users and includes an opinion on the true and fair view of the environmental performance as reflected in the environmental report.

The subject matters of environmental auditing include subject matters from a management perspective as well as from an accountability perspective. Hillary (1998) explains the growth of environmental auditing from a management perspective. It is the response to a business need to be able to more effectively control environmental performance, and its efforts to promote self-regulation as a more cost-effective mechanism to achieve environmental improvements than additional 'command and control' environmental regulation. The increase in growth of environmental auditing may however also be explained from the accountability perspective. Companies increasingly acknowledge the right of stakeholders to reliable information.

A similar kind of distinction to that made by Piet is also made by CICA (1992) in their report in which they evaluate the role the accountancy profession can play in environmental audits. The audit of environmental reports is seen as a final stage of environmental auditing. However not only the quantitative results of the environmental policy and environmental management will be subject to audit. The research results in chapter 4 show that the (qualitative) information on environmental policy and environmental management itself is also subject to audit. The research results also show that in addition to the audit of environmental reports some other type of services are also performed (whether or not by the auditor involved). In general the following types of services are distinguished (CICA, 1992):

1. Assessments, being services that in qualitative and/or quantitative terms either investigate the existing condition of something, e.g. a site, or assess risk/probability regarding future events and conditions, or assess the nature and extent of future effects and impacts (in practice referred to as environmental reviews);
2. Certifications, being the comparison of the products and processes against predetermined specifications or standards, so that customers or consumers may use them with confidence about their safety, functionality, quality etc. (e.g. ISO 14001 or ISO 9001 certifications);
3. Accounting, being the measurement, recording, analysis and communication of information about ongoing operations, emissions, transactions etc. in appropriate units, financial or non-financial;
4. Consulting, being studies and reviews for performance improvement or problem-solving, or systems design and implementation assignments;
5. Auditing, being examinations of subject matter information based on verifiable sources (i.e. records and information systems) to determine whether it conforms to predetermined or pre-existing criteria.

In addition, compilation engagements exist in which the professional assists the company in its reporting process, including the data collection and consolidation. The reason why such additional services are provided can be found in the fact that auditing environmental reports is still voluntary. Companies are free to choose the scope of the engagement. Companies often also want some benefit from the audit and therefore expect some advice on their environmental performance. In practice, this has led to different audit approaches. By selecting a certain auditor, the company implicitly selects a certain approach. In auditing environmental reports the following approaches can be distinguished:

1. the accountancy approach;
2. the consultancy approach; and
3. the social audit approach.

The accountancy approach is the traditional way of auditing on behalf of the users of audit. It focuses on compliance of the subject matter with agreed audit criteria. In addition to the audit report, it will often also result in a management letter in which the main limitations in the environmental information and reporting process and its related internal controls are set out. The consultancy approach is aimed more at providing recommendations for improvement to the client and as such is a combination of consulting and auditing. The audit report reflects these main recommendations. The consultancy approach is mainly aimed at fulfilling the needs of the client.

The external social audit approach is an approach in which an organisation, independent of the organisation reported upon, collates and publishes the social accounts -whether or not the organisation wishes this to happen (Gray, 1998). The auditor not only has a hand in guiding the organisation along the road to reporting but also reports independently both within and on the accounts. The auditors test the truth, appropriateness or basic soundness of the social accounts and the social accounting process themselves (Zadek & Evans, 1992; Zadek 1993). Social audits are pioneered by organisations such as Social Audit, The Council on Economic Priorities and have been taken up by pressure groups as Greenpeace, Friends of the Earth and the New Economics Foundation¹⁴. The essence of such social audits is that in absence of social accounting by the organisation, independent bodies force accountability upon the organisation. They are powerful tools and are an important expression of how the accountability needs of the state fall behind the legislative actions of the state (Gray, 1998). A major concern relating to social audits is that without a real change in corporate governance structures, the social audit could become monopolized by consultants and/or corporate management and hence amounts to little more than a skilfully controlled public relations exercise. How meaningful can the role of an independent auditor be in the absence of reforms of corporate governance procedures, which give stakeholders a legitimate role in corporate decision making. In order to avoid capture by economic interests it is essential that administrative reform, or the development of new forms of accounting which can heighten levels of organisational transparency is accompanied by institutional reform designed to empower stakeholders through instituting more participatory forms of corporate governance

¹⁴ Name changed into New Economics

(Owen et al., 2000). The social audit approach is in fact a response to the lack of stakeholder involvement in the traditional accountancy approach. The main stakeholder involvement however, in my opinion, should be in deciding on the scope of the audit, not in the audit process itself. Therefore, the companies issuing the audit engagement should engage more widely with stakeholders on this topic. Social audits, however, are beyond the scope of this thesis.

Many audit practices have grown out of changes in public sector management and newly prominent ideals of quality, governance and accountability. Power (2000,1997, 1996, 1994) warns against an audit explosion. In seeking to explain the rise of auditing, Power identifies a number of contributory factors including a growth of interest in corporate governance and an increasingly prominent organisational role for internal control systems. These changes are a result of a general shift towards indirect, regulatory styles of governance and the rise of quality assurance/management initiatives. The promotion of systems of self-regulation creates a greater demand for mechanisms such as auditing which allow for 'control at distance', allowing central governing bodies to maintain strategic control. Within these developments auditing has taken on different forms and functions. Audit has moved in some instances from an external to an internal focus or switched from a traditional, 'credibility-assessment' function to one more concerned with the efficiency and effectiveness of performance. Power regards audit as 'control of control', which suggests that audit is a never-ending, ever-deepening cycle of monitoring and checking. Auditors will set the requirements for auditable systems. By setting requirements for auditable systems, auditors are influencing the existence of a control system to become more important for audit purposes than for what the system actually is. The tail of audit is increasingly wagging the dog of accountability and there are doubts about whether audits really empower the agents which they are intended to serve.

Humphrey and Owen (2000) on the other hand believe that there is an audit implosion. Expertise, operational independence and proximity to real time cultures of control are desirable. Audit processes are redesigned to reflect risk management. The distinction between audit and consulting becomes blurred. In their opinion, the audit explosion is not simply a functional response to complexity and to increasing risk in different areas of society. Control of control is likely to remain relevant and useful in a regulatory system with a greater accent on internal self-inspection.

2.7 Conclusions

Relationships of responsibilities are changing. Organisations are being held accountable for a wider range of subject matters. Society's well-being is becoming more important than profit. The changes are influencing the structures for corporate governance. Supervision is preferably performed by representatives of all stakeholder groups. Auditing is part of the supervision by stakeholders.

Information is related to influence. Therefore, the process of environmental reporting should be the result of participatory democracy. Rights to information argue for an increase in transparency by organisations. Much of the information to which society is entitled to is not established through laws and regulations. Organisations tend to manage their stakeholders and as such tend to influence the process of accountability. Reporting therefore may be used to maintain the public perception of the importance of the company.

The environmental management system is part of the overall internal control of the company. A design somewhat different from existing frameworks was chosen for the design of environmental management systems. It seems that especially the attention for internal control activities in relation to the reliability of environmental information is not as sophisticated as in existing frameworks for internal control such as COSO. This may influence the auditability of environmental reports.

The scope of environmental auditing has developed from an internal management tool to external auditing on behalf of stakeholders (Piet, 1996). The stages in environmental auditing define the subject matters of the audit and therefore the required subject matter expertise. Both the audit of the environmental management system as well as the audit of environmental reporting is important, but over-auditing must be prevented. Different approaches exist for the audit of environmental reports that seem to be related to the background of the auditor. In this thesis the focus is on the accountancy approach.

Chapter 3 The development of a generic audit framework

“While the concept of audit may remain constant, the operational interpretation of the concept is an evolving one, dependent not only on changing ethical values but also on a societal value judgement as to those issues of accountability to which the audit process should be applied, as the social benefit is perceived to exceed the relative social cost. Changing circumstances, either of ethical standards or of societal needs, determine the evolution of the audit.” (Flint, 1988)

3.1 Introduction

This chapter describes the contribution of philosophies developed by the accountancy profession to a framework for the audit of environmental reports, especially in relation to the theoretical foundation. In more different domains than the financial domain, there appears to be a need for auditing. It may therefore be important to identify, within the existing philosophies of auditing, those elements that may also be applicable to other domains. The philosophies developed so far focus only on different audit engagements that can be performed by accountants. The need for auditing different kind of subject matters is expanding. The accountant is not always the most competent professional to perform these audits. Even a multidisciplinary team in which the accountant takes the lead is not always the solution. How can an accountant take the lead if the domain in which the ultimate decision has to be made is not within his/her main expertise, accounting, but in domains such as legislation, information technology or the environment? In these domains the accountant may not be the most competent person. Besides, the methods and techniques to be used in these domains to collect audit evidence may be quite different from the ones to be used in the accounting domain. In practice, therefore, we see professionals with expertise in different disciplines that also perform audits, for instance within the environmental domain. IFAC is not the only standard setting body in relation to auditing. The International Organisation for Standardisation (ISO) already has developed standards for quality and environmental audits. However, these standards are based on internal audits.

It is important to develop for audits that are performed within a domain different from that of the traditional 'accounting' domain a similarly sophisticated auditing theory (Wilschut, 1994b). Of course we can borrow quite a lot from the existing auditing theory that focuses on financial statements, but because the need for these different kinds of audits has different roots differences in especially audit methods and techniques might appear.

In this thesis first the theoretical foundations of the framework¹⁵ are developed. Next, the characteristics of each domain have to be explored. A general theory of auditing can provide a basis, but for each domain it needs to be further refined. Philosophies on auditing as set out

¹⁵The theory forms the basis of the framework (see also figure 5.1 and paragraph 1.3)

by Limperg (1926), Mautz and Sharaf (1961), Flint (1988) and Wilschut (1985a) have provided important building stones for a general theory of auditing. IFAC has developed a framework for assurance engagements (IFAC, 2000). The theoretical foundations however are not discussed. Further the framework is developed from an accountancy point of view and therefore only addresses assurance engagements that can be performed by accountants. Wilschut (1985a) describes a general theory of auditing that can be applied within different domains by different kinds of auditors. Based on literature and the results of exploratory research, the general theory of auditing is further specified for the audit of environmental reports in chapter 8.

Paragraph 2 briefly explains and discusses some existing philosophies on auditing. Paragraph 3 discusses the postulates underlying the general theory of auditing. Paragraph 4 discusses the elements of auditing and related concepts such as independence and due audit care. Paragraph 5 describes the conceptual frameworks of auditing based on the discussions in the previous paragraphs.

3.2 Philosophies of auditing

In this paragraph, different views of philosophers on auditing are briefly explained. In doing so I have tried to cover the major overall frameworks written in relation to auditing. As I am a Dutch author a certain emphasis may be placed on Dutch philosophers on auditing. Their more specific concepts on matters such as independence, evidence, due audit care will be explained in more detail in paragraph 5.4¹⁶.

3.2.1 Limperg (1926)

In 1926 Limperg introduced the theory of rational expectations at the International Conference of Accountants in Amsterdam. Although written for accountants it is applicable to auditors in general. In his theory of rational expectations he writes that the reason for the existence of the auditing profession is the need for a professional and independent audit and a professional and independent judgement. The general public has confidence in the effectiveness of the audit and the judgement of the auditor. Therefore the auditor should act in such a way that the user's confidence in the audit function is justified. Further there should not be more confidence in the function of the auditor than is justified based on the audit work performed and the expertise of the auditor. By means of the audit report the auditor provides individual confidence. The audit report therefore should not arouse more confidence than can be justified based on the audit work performed and the expertise of the auditor.

¹⁶The various authors speak about 'the accountancy profession' and about '(professional) accountants'. Since the theories, postulates and concepts are applicable to auditors in general and in order to keep consistency within this thesis the words 'auditing profession' and 'auditors' are used instead. When a specific reference to the background was necessary, the word 'accountant' has still been used.

The audit report is not just a report in which the opinion of the auditor is reflected. It is also the final piece of the audit process and as such the account of the auditor with regard to the audit work performed. It is for this reason that there is an inextricable relationship between the purpose of the audit and the scope of the audit report. Besides the contents of the audit report, the extent of the auditor's responsibility is also determined by the audit work that is performed in order to formulate the opinion. The kind of audit work to be performed is determined by the task. The opinion of the auditor has relevance for the user only because of the independence and competence of the auditor. Implicitly the reader expects that the auditor has performed all the work that was necessary to formulate the opinion given in the audit report.

Limperg stated that a difference between the fulfilment of the audit function and the expectation in respect of that function might be caused by overconfidence in the effectiveness of the audit or shortcomings in the fulfilment of the function.

In his paper Limperg states that his theory is restricted to the annual audit of the financial statements. The concept of 'creating not more expectations than can be justified based on the audit work performed and performing the task in such a way that user's confidence in the audit function is justified' seems to be generally applicable to all kind of auditors. Limperg warned the auditor that performing less audit work than necessary or not fulfilling the rational expectations of the users might lead to a loss of the *raison d'être* for the audit function.

Limperg's suggestion that, in relation to the audit of financial statements, in practice, users all have the same expectations of the audit and that these expectations are some kind of norm for the objective of the audit, did not come true. In practice, we are still struggling with an expectations gap. This is not only due to the dynamic nature of auditing as a result of continuing changing relationships of accountability and related changes in expectations of users. It is much more fundamental. Perhaps users' expectations are not as transparent as Limperg expected or are perhaps not perceived as rational by auditors. On the other hand perhaps auditors are not clear in their audit report or do not adapt the objective of their audit to users' needs.

It is obvious that to prevent misunderstanding between users, auditees and auditors, it is important to increase communication between these groups.

3.2.2 Mautz and Sharaf (1961)

“Auditing deals with abstract ideas; it has its foundations in the most basic types of learning; it has a rational structure of postulates, concepts, techniques, and precepts; adequately understood, it is a rigorous intellectual study worthy to be called a “discipline” in the current sense of that term. Thus auditing provides opportunities for and even demands strenuous intellectual effort. It is by such effort that its underlying theory may be discovered, comprehended, and used for the improvement of the profession.” (Mautz and Sharaf, 1961, page 16)

In 1961 the American Accounting Association (AAA) published the philosophy of auditing as developed by Mautz and Sharaf. After Limperg's it was the first comprehensive contribution to a theory of auditing. They explain why auditing can be described as a science. In their philosophy of auditing they borrow from scientific methodology. The most important contribution of Mautz and Sharaf is that their philosophy of auditing was described in such a systematic way, using postulates and concepts, that it provided a sound basis for further scientific research in auditing.

They describe their view of auditing using a five-level structure:

1. The philosophical foundation, which in turn is based on abstract sciences;
2. The postulates that provide a groundwork for the development of essential concepts;
3. The concepts around which the bulk of the theory on auditing is organised;
4. The precepts. Certain more or less obvious directives for guidance of the practitioner appear out of the concepts;
5. The practical applications in which the precepts are applied to actual situations.

In their publication they discuss only the first three levels. In my opinion, one level is missing: the framework. The level of the framework should be placed between the concepts and the precepts. The first three levels of Mautz and Sharaf, in my opinion, describe the theory of auditing.

It was their intention that their study would serve as introductory work only. Mautz and Sharaf describe the main purpose of their philosophy as providing solutions or clues to solutions for existing problems. Besides the auditing profession had been so busy getting itself established and accepted that it has had little time to philosophise on what it is doing and why it is socially desirable.

“Auditing is also an “applied” discipline, and because an applied discipline draws its “principles” or basic theory from many other fields, some of them are pure and some of them are also applied, there is always the possibility that it will lose sight of its connection with and dependence on the more basic or abstract fields of learning. Thus it may neglect its theory and give a disproportionate part of its attention to applications and to immediate day-to-day problems. This is always unfortunate because the strength of any discipline lies in its foundations. Auditing can scarcely be accused of neglecting its theory, however, because it is still so young as perhaps never to have become really aware of its relationship to the fundamental disciplines.

Yet the danger is present nonetheless. We have a strong tendency in auditing to adopt a pragmatic approach. Whatever works well is adopted and strongly advocated; what has not been yet found applicable has little appeal. To some extent this is a natural tendency, yet we must keep this in bounds. We must continuously test our practices and procedures, not only in actual practice, but against the theory which underlies auditing. And we should continually search theory for possible approaches to both new and old problems. If we forget the theoretical foundation of auditing and let it dwindle to a mere collection of rote procedures and practices reminiscent of its early history, it will not only lose stature in the eyes of the world but will forfeit the best method of solving its most perplexing problems”. (Mautz and Sharaf, 1961, page 17)

Mautz and Sharaf find the roots for the first level, the philosophical foundation, in the literature on science. In this philosophical foundation lies the definition of purpose of the field and the fundamental nature of its knowledge and methodology. They state that auditing is critical, investigative, concerned with the basis for accounting measurements and assertions and that auditing therefore has its roots not in accounting but in logic. Logic is concerned with how we establish facts, conclusions, and inferences as valid or invalid. Auditing, like any discipline, which relies heavily on evidence, is based on logic. It is an application of logic to certain real situations. Although differences exist, there is an obvious relation between the methodological approach of scientific research and auditing. Both define the research questions, collect evidence and draw conclusions.

In developing a theory of auditing, the discipline can borrow from other fields. Theories from other fields however need to be suitably modified and adapted to the problems of auditing (Mautz & Sharaf, 1961). From the definition of auditing used in this thesis, it appears that in addition to the characteristics of the auditor, the collection of evidence (audit process) and the drawing of conclusions (audit judgement) are important aspects of auditing. For the ways to obtain evidence and to draw conclusions, auditing theory draws on the philosophy of science, the philosophy of mathematics and the philosophy of logic. The philosophy of value (ethics) and behavioural sciences (especially psychology) are important in terms of the characteristics of the auditor and their effect on the audit process and the audit judgement. The philosophy of ethics is also important for the audit criteria used to assess the subject matter of the audit. If the audit is, as Flint (1988) states, designed to monitor compliance with specified norms of what is acceptable behaviour, then it is clearly culturally, socially and politically dependent. Auditing theory draws on the theory on communication to discuss the communication during the process of audit engagement and the reporting of the audit judgement . As such auditing is a discipline that for its theory development gains from multi-disciplinary research.

The second level of their philosophy concerns the development of postulates, as a basis for thinking about problems and arriving at solutions.

Mautz and Sharaf have developed the following tentative postulates of auditing:

1. Financial statements and financial data are verifiable.
2. There is no *necessary* conflict of interest between the auditor and the management of the enterprise under audit.
3. The financial statements and other information submitted for verification are free from collusive and other unusual irregularities.
4. The existence of a satisfactory system of internal control eliminates the *probability* (which is not the possibility) of irregularities.
5. Consistent application of generally accepted principles of accounting results in the fair representation of the financial position and the results of operations
6. In the absence of clear evidence to the contrary, what held true in the past for the enterprise under examination will hold true in the future.

7. When examining financial data for the purpose of expressing an independent opinion thereon, the auditor acts exclusively in the capacity of an auditor.
8. The professional status of the independent auditor imposes commensurate professional obligations.

The tentative postulates developed by Mautz and Sharaf again focus on the audit of financial statements. Some postulates are stated to prevent the necessity at all times to design an audit program so extensive and detailed that it goes far beyond anything now considered to be necessary.

According to Bindenga (1973) just one postulate will be sufficient for a philosophy: “Financial statements and financial data are verifiable”. In my opinion more postulates are necessary to define the precondition for auditing. However I do agree that not all of the postulates mentioned by Mautz and Sharaf can be described as postulates. Bindenga is of the opinion that especially postulates 3 and 4 are unnecessary pre-conditions for auditing. Further Bindenga is of the opinion that too much emphasis is placed on the collection of evidence, while the judgement of accounting principles used in regard to valuation and profit calculation is not properly addressed. In paragraph 3.3 below the postulates underlying the general theory of auditing are further discussed.

Given the postulates Mautz and Sharaf develop, such as the third level of the auditing theory, five concepts are described around which the structure of the theory is organised. These concepts concern ‘evidence’, ‘due audit care’, ‘fair presentation’, ‘independence’ and ‘ethical conduct’. The concepts show some similarity with the philosophy of Limperg, but are more elaborate. Where relevant in the context of a general theory of auditing, they are discussed below in paragraph 3.4. A major contribution by Mautz and Sharaf is that, in discussing their concepts, they pay considerable attention to the psychological aspects of obtaining evidence and of the process of audit judgement. After all auditing is not just a technical issue, but is performed by human beings with all their human characteristics.

In addition to the publication of Mautz and Sharaf, the American Accounting Association in 1973 published a statement of basic auditing concepts. It elaborates on the role of auditing, the investigative process and the reporting process. It was intended as an attempt to contribute to the theory of auditing. For the investigative process the AAA have sought to find the conceptual foundation in scientific methodology. The propositions on the subject matter information can be compared with hypotheses. The different problems that may occur when assessing the truth and validity of the propositions, such as personal perceptions, inter-subjectivity, errors in observations and human bias are discussed. The reporting process is dealt with from a communication theory perspective. In relation to the audit report technical and semantical problems are discussed. Relevant concepts are discussed in paragraph 3.4.

3.2.3 Flint (1988)

Flint has further developed the philosophies of Limperg and Mautz and Sharaf. Flint has his roots in the United Kingdom, where numerous new perceptions on accounting and accountability in relation to a sustainable society were published. His philosophy is concerned with the subject of auditing as a function in society with a number of different applications. Flint tries to identify a minimum continuing constant element which constitutes what can be identified and described as the 'audit'. Flint recognises that the audit process is culturally, socially and politically dependent. He perceives an audit as a control mechanism to monitor conduct and performance and to secure or enforce accountability. The audit process is designed to monitor compliance with specified norms of what is acceptable behaviour. The standards of acceptable behaviour must derive from the value system and the mores and sanctions of the total environment of the society. These value systems may be different within different countries and therefore although the principles of auditing may be the same, the practical applications may be different. In these perceptions of Flint we can identify the developments within the UK. Ethical behaviour and accountability of organisations were two items that attracted increasing interest. Flint also elaborates Limperg's theory of the rational expectations in the light of the present time. This theory is still valid:

"The audit function has evolved in response to a perceived need of individuals or groups in society who seek information or reassurance about the conduct or performance of others in which they have an acknowledged and legitimate interest; it exists because the individuals or groups are unable for one or more reasons to obtain for themselves the information or reassurance they requireIn a changing and developing society the interpretation of the practical implementations of the audit concept must be the result of constant interaction between the relevant group and the auditors. Auditors must be sensitive to changing expectations of the relevant groups while at the same time containing these expectations within the constraints of what is possible. There are inevitably economic and practical limitations on what an audit can do, and this is something which those who wish the benefit of an audit must understand. The social machinery for interaction between auditors and audit policy-makers and the relevant interest groups is informal and unstructured, but it is important that it should be effective. A failure on the part of auditors or audit policy-makers to recognise the dynamic nature of auditing or to respond to legitimate societal pressure will result in frustration of the social purpose and the emergence of the kind of 'expectations gap' and misunderstanding to which reference has been made... It is necessary to create a system whereby the relevant interest groups can secure the reassurance and protection they desire without exposing the auditors to unreasonable and unsupportable risks." (Flint, 1988, p. 14/15)

Flint (1988) describes the following postulates:

1. The primary condition for an audit is that there is a relationship of accountability or a situation of public accountability.
 - Between two or more parties in the sense that there is a duty of acceptable conduct or performance owed by one party to the other party or parties. The first parties are required to give an account, provide information or provide access to information as a basis of decision by the group or groups to whom they are accountable.

- Some party produces an account or information which is publicly available and which is known to be likely to be used and relied on by a special group or groups of which the members may not be constant or individually identifiable, producing constructively a relationship of accountability. The first party perceives the need to establish the reliability and credibility of the account or information.
 - A public interest dimension to the quality of the conduct or performance of some party resulting in a situation of public accountability. Governments, public bodies, international agencies, charitable foundations and similar organisations have a public responsibility for the way in which they discharge some or all of their functions.
 - A need or a desire to establish the authenticity of information given or statements made by some party which are intended to or are likely to influence the actions of unspecified members of the general public or a section of it, producing constructively a situation of public accountability. The public release of information imposes a duty of public accountability.
2. The subject matter of accountability is too remote, too complex and/or of too great significance for the discharge of the duty to be demonstrated without the process of audit.
 3. Essential distinguishing characteristics of audit are the independence of its status and its freedom from investigatory and reporting constraints.
 4. The subject matter of audit, for example conduct, performance or achievement or record of events or state of affairs, or a statement of facts relating to any of these is susceptible to verification by evidence.
 5. Standards of accountability, for example of conduct, performance, achievement and quality of information, can be set for those who are accountable; actual conduct, performance, achievement, quality and so on can be measured and compared with these standards by reference to known criteria; and the process of measurement and comparison requires special skill and the exercise of judgement.
 6. The meaning, significance and intention of financial and other statements and data which are audited are sufficiently clear that the credibility which is given thereto as a result of audit can be clearly expressed and communicated.
 7. An audit produces an economic or social benefit.

In contrast to the postulates developed by Mautz and Sharaf, these postulates have a more general character. Still some comments can be made. Paragraph 3.3 below discusses these comments. In his philosophy on auditing Flint acknowledges that there is a need for different kinds of audit. The postulates of Flint and the elements of auditing (see next paragraph) are briefly discussed by Piet (1993, 1992) for the environmental audit. In my opinion, the postulates need to be reconsidered since Flint's philosophy is still written from the perspective of auditors from the accounting domain. He takes into account all the different audits such an auditor can perform. Society, however, also has a need for audits from other domains than accounting, such as in the legal domain or the environmental domain, that

cannot be performed by accountants (also referred to as accounting auditors) due to a lack of competence in other disciplines.

3.2.4 Wilschut (from 1985-1999)

Wilschut (from 1985-1999) has explained a general theory of auditing in a series of articles. The purpose of auditing in his theory is not restricted to verification, but implies in particular professional judgement. Auditing includes elements of both confirmation and evaluation. He acknowledges that auditing is not just restricted to the accounting domain, but can be applied in different domains by different professionals.

“The existence of different forms of auditing gives rise to the need of a conceptual framework which is applicable to all forms of auditing: that is, for a general theory of auditing. Such a theory facilitates the development and further improvement of specific auditing theories and can bring about mutual understanding between auditors of a different background. This is of great importance because, in practice, the need for auditing is not determined according to the discipline of the auditor, but cuts right across inter-disciplinary boundaries. Consequently, auditors with different backgrounds will increasingly have to work together in completing an audit engagement.” (Wilschut, 1994b, p. 106)

Three layers are distinguished in the general theory of auditing developed by Wilschut. The first layer explains the need for auditing and describes the aspects that are important to form a professional judgement about a certain subject matter. The second layer shows the different stages in auditing and the audit procedures that have to be performed in order to form this professional judgement, given the audit objectives. The third layer describes the techniques and tools the auditor uses to carry out these activities.

Wilschut (1994b) explains the most important aspects of his theory as follows:

“First of all there is the engagement to carry out an audit. From this engagement the auditor has to derive the subject matter of the audit. It may be that different disciplines are involved with that subject. The subject matter of the audit may refer to information, performance (results), operations or planning and control in relation to a particular domain. Related to this subject matter of an audit are the audit objectives, which must also be determined. For example where financial statements are the subject matter of the audit, the central audit objectives are truth and fairness, from which can be derived audit objectives, such as accuracy, description and explanation, appraisal of assets and liabilities, cut-off transactions, completeness of reported transactions, assets and liabilities etc. The audit of financial statements is a well-known audit engagement, so determination of audit objectives is not difficult in contrast to engagements, which occur less frequently. Given the audit objectives, audit criteria have to be established by means of which the auditor can assess the degree to which the audit objectives have been met. Determination of the audit criteria may also be quite difficult in the case of engagements of infrequent occurrence. The auditing process is the next central issue of such a general theory. This process may contain several stages including investigation of the subject matter of the audit, inspection of the system of planning and control, verification of the data, evaluation of performance and reporting the findings thereof. Furthermore the theory must pay attention to the

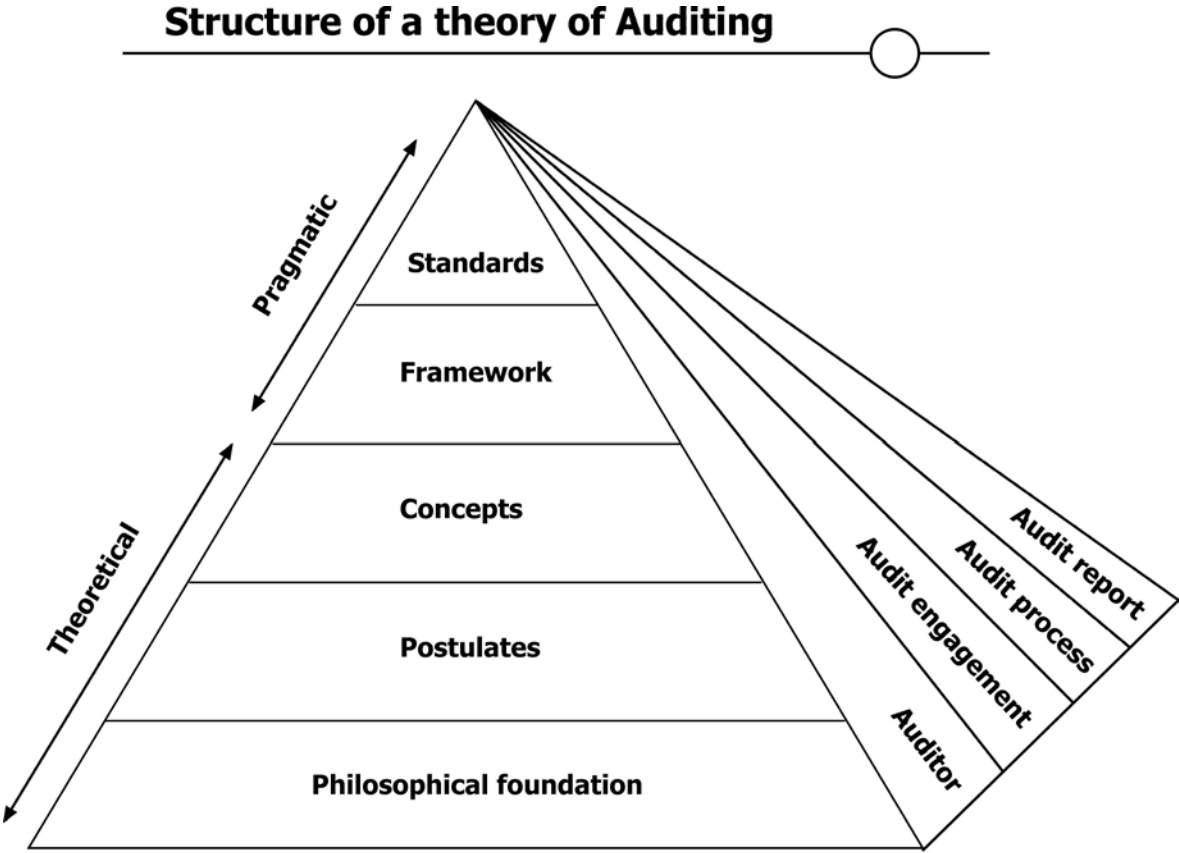
means of auditing, which can be classified in techniques, methods and tools. The theory has to pay attention to the risk analysis regarding the use of the means of auditing in relation to the subject matter of the audit. Last, but not least, the theory has to analyse the interrelationships between all afore-mentioned subjects.” (Wilschut 1994b, p.105-106)

In my opinion, Wilschut approaches auditing as an applied science and therefore emphasises auditing as a technical process. According to Wallage (1993) the auditing theory enhances a variety of research topics and can be approached from different angles (Wallage, 1993). In my opinion, the process of audit judgement, although it is perhaps more a research topic for behavioural researchers, needs to be included in the theory of auditing. In his articles on a general theory of auditing, Wilschut has discussed the elements of auditing that all audits have in common.

In this paragraph the views of different philosophers that contributed towards a general theory of auditing have been described. Limperg’s theory is still valid and provides the basis for a general theory of auditing. His theory of rational expectations is reflected within different existing concepts of auditing. Mautz and Sharaf provided a basic structure to describe a general theory of auditing. Their contribution is reflected in the theoretical foundation of the theory and in the discussion of the concepts of auditing. The AAA, although very much focused on the scientific methodology, provided information on the major technical risks in assessing the truth and validity of the propositions made on the subject matter. In addition some points for attention in relation to the reporting process are given. Flint’s philosophy provides a major contribution to the discussion of the postulates. Finally, Wilschut contributes to providing a framework of auditing in general. Figure 3.1 shows the structure of a theory of auditing.

The different philosophies provide input in theorising auditing from the basis. Next, the postulates are described as starting point for the theory. Based on the postulates concepts are described in relation to the different elements of auditing. The framework provides an overall structure of the elements of auditing in which the different concepts of auditing are included and provides the starting point for more detailed standards and guidelines. The major topics that the theory of auditing describes concern the auditor (competence, ethics and professional judgement), the audit engagement (subject matter, audit objectives and audit criteria), the audit process (stages, methods and techniques to collect evidence) and the audit report. In the following paragraphs the general theory of auditing is discussed. In paragraph 3 the postulates of a general theory of auditing are discussed. In paragraph 4 the elements and related concepts of auditing such as independence, the subject matter of the audit and due audit care are discussed.

Figure 3.1



3.3 Postulates of auditing

The postulates form the basis of the concepts of the theory. The postulates must be consistent with each other. Auditing is part of social interactions between different parties. The existence of a duty of accountability is important for the need for auditing. To explain the audit function in practice therefore cannot be done without a social-political context of the relationship of powers between different parties and the duty of accountability. Different theories exist with regard to the discussion of the need for auditing, such as the agency theory and information theory. The reader will find reasons for the need for auditing within the postulates. Limperg himself did not mention any postulates explicitly. Although more elaborate, Wallage (1993) has used Limperg’s theory of rational expectations to formulate his postulates.

Table 3.1 shows the postulates as formulated by Mautz & Sharaf, Flint and Wallage. In order to compare them the order has been changed.

Table 3.1 - Overview of postulates

Mautz & Sharaf (1961)	Flint (1988)	Wallage (1993, translated)
<i>Need for auditing</i>		
There is no <i>necessary</i> conflict of interest between the auditor and the management of the enterprise under audit	The primary condition for an audit is that there is a relationship of accountability or a situation of public accountability. The public release of information imposes a duty of public accountability.	For the existence of the need for auditing a relationship is necessary between two or more parties concerning the duty and/or right to accountability.
	The subject matter of accountability is too remote, too complex and/or of too great significance for the discharge of the duty to be demonstrated without the process of audit.	(Potential) users have a need for reliable information. They want an independent judgement on the reliability of the accounts as a reflection of the policy or management applied.
	An audit produces an economic or social benefit	In principle, there is only a need for auditing if there is an economic or social net revenue (profits exceed the costs).
<i>Conditions for the audit</i> <i>a. auditor</i>		
When examining financial data for the purpose of expressing an independent opinion thereon, the auditor acts exclusively in the capacity of an auditor	Essential distinguishing characteristics of audit are the independence of its status and its freedom from investigatory and reporting constraints.	The auditor is impartial and has in relation to the postulate on the net-revenue responsibilities towards society and clients so that they can recognise and encourage the professional status.
The professional status of the independent auditor imposes commensurate professional obligations		The professional status of impartial and independent auditor also has the consequence that the function has to be performed in such a way that expectations of those that give this status are fulfilled and that no expectations are aroused that cannot be fulfilled through the audit process.
	The process of measurement and comparison requires special skill and the exercise of judgement	Given the complexity of the process of comparability and audit judgement, specific competence and skills in judgement are required.

Mautz & Sharaf (1961)	Flint (1988)	Wallage (1993)
<i>b. subject matter, objectives and criteria</i>		
Financial statements and financial data are verifiable	The subject matter of audit, for example conduct, performance or achievement or record of events or state of affairs, or a statements of facts relating to any of these, is susceptible to verification by evidence	The subject matter of the audit is the financial reflection of circumstances that can be audited against standards. However, all the time falsifying the information will do.
The financial statements and other information submitted for verification are free from collusive and other unusual irregularities		Financial data and accounts are evaluated on their reliability rather than on their absolute accuracy.
The existence of a satisfactory system of internal control eliminates the <i>probability</i> (which is not the possibility) of irregularities		For misstatements, irregularities or fraud that cannot be detected through auditing, applies the axiomatic reservation.
Consistent application of generally accepted principles of accounting results in the fair representation of financial position and the results of operations. In the absence of clear evidence to the contrary, what was held true in the past for the enterprise under examination will hold true in the future	Standards of accountability, for example of conduct, performance, achievement and quality of information, can be set for those who are accountable; actual conduct, performance, achievement, quality and so on can be measured and compared with these standards by reference to known criteria.	
<i>c. reporting</i>		
	The meaning, significance and intention of financial and other statements and data which are audited are sufficiently clear that the credibility which is given thereto as a result of audit can be clearly expressed and communicated.	

In general there seem to be postulates for the need for auditing and for the conditions necessary to perform the audit. The conditions in relation to the auditor are defined by the needs of the users of audit (referred to as the rights of the users from an accountability perspective). In general it is agreed that auditing is related to accountability. Flint describes this postulate in a quite complicated way. Flint tries to describe all possibilities that may result in a relationship of accountability. In fact the only condition for accountability is, in my opinion, a relationship of (perceived) responsibility. Before there is a relationship of accountability there is a relation of responsibility.

The relationship between at least two parties may exist due to:

- the assignment of actual responsibilities from one party to another party, sometimes substantiated by law and regulations or agreements; or
- having a responsibility to society; or
- the perception of being responsible.

Within organisations or between organisations and third parties, responsibilities are assigned to persons. Different levels of assigning responsibilities and accounting for these responsibilities can be distinguished. Shareholders are not the only stakeholder group that assigns responsibilities to an organisation's management. Different stakeholders are involved in the organisation or its activities. It is therefore to be expected that in future other kinds of stakeholders will be consulted or actively participate in the organisation's decision-making process. Some organisations already have frequent stakeholder group meetings. The assignment of responsibility can take place through the giving of instructions by one party to another party, but can also exist between, for instance, governments and organisations through law and legislation. An example is environmental permits that include a maximum emission granted. The organisation reports to the government on its actual emissions. In order to account for their actions in relation to their (perceived) responsibilities these persons or organisations provide information on their policy, plans, actions or results¹⁷ of their actions. This information may be addressed to a wider public than just those from whom the assignment of responsibility is received. Although the relationship of accountability may exist between only two parties, there may be a need to inform other parties as well about this relationship and its results. An organisation may also have a responsibility to society. One view that is gaining in acceptance is that organisations, especially large organisations, not only have a responsibility to their shareholders and other financiers, but also to other stakeholder groups such as:

- their employees in relation to the employment provided and the health and safety aspects of it;
- customers in relation to the quality, environmental, ethical, health and safety aspects of the products or services provided;
- society in general in relation to the use of (non) renewable natural resources and pollution of air, water and soil or in relation to ethical values.

Such organisations may be obliged by government or other stakeholder groups to report on their policy, plans, actions and the results of their actions to society. An example is Royal Dutch/Shell. After the Brent Spar debacle, Royal Dutch/Shell started to report on a corporate level on environmental issues. Not taking pressures from stakeholder groups into account may eventually negatively influence the image of the organisation. Even without the pressure from governments or other stakeholders, organisations may perceive it as their responsibility to

¹⁷ Reporting on results concerns both reporting on intended and unintended results. Further, the information concerns both the results in the short term as well as those in the long term and where possible also the ultimate impact on society as a whole.

take these social, environmental and ethical aspects into account and report on the achievements to society. Whether the behaviour of organisations, in relation to their acts of disclosure to the public, is really the perceived responsibility or (also) the positive influence this may have on the image of the organisation is always hard to tell.

In theory, all parties involved in the relationship of accountability can issue the engagement to audit a certain subject matter. The possibility of issuing the engagement to audit a certain subject matter is not restricted to the supervisory board or the provider of responsibilities. Also, the party with responsibilities can itself give the engagement. In order to emphasize compliance with the requirements related to the assigned responsibility, this party could issue the engagement to audit a certain subject matter. Besides, depending on the subject matter to be audited different stakeholders can act as commissioner of the audit. Preferably, stakeholders are involved or consulted in giving the audit-engagement.

As a result the first postulate can be formulated as:

1. A primary condition for an audit is the existence of a relationship of (perceived) responsibility and the related duty of accountability between at least two parties.

The situation of a relationship of accountability not always will result in a need for auditing. Only Flint therefore defines a second postulate. In his second postulate however, Flint does not make a distinction between the importance of each of the conditions mentioned. This however is important, because the subject matter may be complex or remote, but if it is not important for the discharge of the responsibility (felt) of the duty, it is not likely that there will be a need for auditing. Therefore in addition to postulate 1 the second postulate can be adapted to:

2. In addition to 1, a further condition for the audit is that:

- a) there is a possibility for a (perceived) conflict of interest; and*
- b) the subject matter of accountability is of too great significance for the discharge of the responsibility duty to be demonstrated without the process of audit; and*
- c) the subject matter of accountability is too remote and/or too complex for the discharge of the responsibility duty to be demonstrated without the process of audit.*

This postulate describes the need for auditing. The subject matter of accountability may be the policy, plans, actions (including systems and behaviour), results of the actions (performance) or information about these items. Examples include the environmental policy, environmental management system, financial statements and the environmental report. The perceived conflict of interest between the party that has assigned responsibilities and the party that has to account for these received responsibilities increases the need for an audit. Within the agency theory (based on Alchian and Demsetz, 1972 and Jensen and Meckling, 1976 further described by different authors e.g. Douma, 1987; Wallage 1993; Emanuels, 1995) these two parties are referred to as principal and agents respectively. The goals, preferences and risk attitudes of principals and agents may vary. Because of these differences the principals may want to monitor their interests. However, due to the impossibility of monitoring the actions

and decisions of agents all the time, there may be an information gap between the principal and the agent. The costs of protecting the interests of the principal are also referred to as agency costs and exist of:

- bonding costs: costs incurred by the agent in order to show that he/she complies with the contract;
- monitoring costs: costs incurred by the principal to monitor the actions and decisions of the agent;
- residual losses: costs due to actions and decisions that were not optimal, from the viewpoint of the principal.

The bonding costs that are incurred by the agent due to a perceived risk of bias and motives of the agent (that is the provider of information) are also reflected in legitimacy theory, a theory in which the role of information and disclosure in the relationship between different parties within society is explained. Legitimacy theory at its simplest argues that organizations can only continue to exist if the society in which they are based perceives the organization to be operating to a value system which is commensurate with the society's own value system¹⁸. Organizations may face many threats to their legitimacy (Gray et al. 1997). Lindblom (1994) argues that an organization may employ four broad legitimation strategies when faced with different legitimation threats:

- a) seek to 'educate' its stakeholders about the organization's intentions to improve that performance;
- b) seek to change the stakeholders' perceptions of the event (but without changing the organizations' actual performance);
- c) distract (i.e.) manipulate attention away from the issue of concern (concentrate on some positive activity not necessarily related to the failure itself); or
- d) seek to change external expectations about its performance (by for example explaining why a competitive, profit-seeking, wealth-creating company is not actually responsible for human-rights abuses of its employees in a repressive regime in which it operates).

Such strategies may lead to biased information and as such create a need for auditing. In relation to the subject matter of information, conflicts of interests may not only result in biased information that is intended to influence users in a certain matter, but unintentional errors can also be made. The agency theory however, does not explain the reasons of the information risks. In relation to the subject matter of (financial) information, the need for auditing due to information risks is explained by information theory. Auditing reduces the information risk, that is the possibility that the information upon which the business decision was made was inaccurate. Information risk is caused by (Arens & Loebbecke, 1997):

- remoteness of information: it is virtually impossible for a decision-maker to have much first hand knowledge about the organization with which he/she does business. Information provided by others must be relied upon. Whenever information is obtained from others the likelihood of it being intentionally or unintentionally misstated increases;

¹⁸ See also paragraph 2.4

- bias and motives of provider: if someone whose goals are inconsistent with those of the decision-maker provides information, the information may be biased in favour of the provider. The misstatement could be in the form of outright incorrect amounts or inadequate or incomplete disclosures of information;
- voluminous data: as organizations become larger, so does the volume of their exchange transactions. These increase the likelihood that improperly recorded information will be included in the records, perhaps buried in a large amount of other information;
- complex exchange transactions: in the past few decades, exchange transactions between organizations have become increasingly complex and hence more difficult to report properly.

The perceived conflict of interest will not always lead to a need for auditing. The significance of the subject matter is also of influence. Significance means the relative importance of the performance and/or the information to the judgement and the decisions of the interested parties (Flint, 1988). The more significant the subject matter, the more likely it is that a need for audit exists. A subject matter may be remote or complex, but if it is not perceived as significant it is unlikely that a need for auditing exists. If the subject matter is information, the users of this information will attach greater importance to satisfying themselves as to the quality of information if decisions based on this information are of significant consequence to the user (AAA, 1973). Remoteness means that there are barriers to access by the interested parties to the means of satisfying themselves on the matter of accountability (Flint, 1988). This may be a geographical separation from the source of data, there may be legal, organisational, time or cost difficulties in the way of individual parties taking their own steps to access the source data. It is for this reason that stakeholders of the organisation may have representatives that supervise organisations in relation to their interests. The most developed supervisory board is the board of commissioners that acts as a representative of shareholders. In the future, other representative stakeholder boards can be expected. Employees for instance have already a Workers' Council. Remoteness per se is no reason for audit. It is the combination with the other reasons mentioned that creates the need for auditing. The complexity of operations and items for which accountability is due and the recording of them may be such that the specialised knowledge and scale of resources necessary to audit them are beyond the personal capacity of most interested parties without specialist assistance. It is for this reason that the board of commissioners that is responsible for the supervision of the organisation's management has delegated part of this task, namely the audit of financial statements, to financial auditors (Wilschut, 1989). Based on their findings the board of commissioners can take decisions and actions. The variety of items the organisation is accountable for makes it more difficult for one single discipline to be able to perform the audit. In practice, we see multidisciplinary teams of auditors or different audit teams for different subject matters.

Both Flint and Wallage state the economic or social benefit as a postulate. It may be regarded as an additional requirement for the need to issue an audit engagement. As such it should be formulated immediately after the first two postulates. Also, it is not always sure that a benefit

is produced. It is the users' *perception* that the audit provides the added value to perceived needs or right or benefits that is important.

Therefore the postulate is changed to:

3. An audit engagement is only given when a possible benefit is perceived.

This postulate implicitly assumes that users of audits think rationally. Only when perceived benefits exceed the costs will an audit engagement be given. It also assumes full democracy. In practice, it is possible that certain audits are mandatory by law, but that the added value of such audits may be questioned. Within a democracy such audits will eventually disappear. Benefits are not necessarily financial benefits, like a decreased borrowing rate due to a financial audit. In agency theory audit costs are perceived as a compensation for the risk reduction of unreliable information on which users base their decisions. As society becomes more interested in social, environmental and ethical benefits, the financial benefit becomes only one of the factors in the 'cost-benefit' considerations.

Audit is part of supervision and supervision contributes to the prevention of non-compliance with requirements of different stakeholders. As such it can contribute to many areas, depending on the requirements set. Examples are a better working climate, or more attention for ethical problems. Postulate 2 indicates under which conditions a supervisory board will assign part of its task to an auditor. The choice of corrective actions to be taken as a result of the audit findings however remains the responsibility of the supervisory board. The supervisory board should not only represent shareholders, but all stakeholders involved in the organisation.

Postulates 1 to 3 provide the conditions for the need for an audit. Implicitly the need for auditing imposes requirements on the auditor and audit process. The fact that there may be a conflict of interest between the different parties within the relationship of accountability results in a requirement that the auditor has to be independent and his/her opinion has to be objective. Independence is a primary condition to be able to provide an unbiased judgement, based on an unbiased process of evidence collection. If this requirement is not fulfilled, the users will not have confidence in the results of the audit. Also, the fact that the need for audit may exist due to the complexity of the subject matter implicitly assumes that the auditor has to be sufficiently competent both in relation to the subject matter and the auditing methods. It may be concluded that besides conditions necessary for the need for auditing, there are also conditions for the performance of the audit. Some of the latter conditions are closely related to the reasons for the need of auditing.

All postulates address independence of the audit. Both Flint and Wallage further describe explicitly the impartiality of the audit. Both independence and impartiality, in my opinion, are characteristics that emphasise an unbiased judgement. Besides these characteristics that result in requirements for the auditors, it is important that the auditor is competent. As Limperg

states, the function of auditor only exists because users of the audit have confidence in the competence of the auditor and his/her independence. It is however not independence as such that is important but users of audit expect that independence implies an unbiased judgement. Wallage states that a specific knowledge and competence in judgement is required. Flint mentions competence in his postulate in which he deals with audit criteria. In my opinion it refers to a requirement of the auditor and therefore should be dealt with as a postulate that sets out requirements for auditors. In addition to competence and independence, the authority of audit is sustained by the status of auditing as a profession and by the ethical standards of auditors. Creating and retaining trust and confidence, therefore requires auditors to show certain characteristics, which are those commonly associated with employments which are recognised and sanctioned by society as professions (Flint, 1988). The fourth postulate therefore can be formulated as follows:

4. The function of auditor exists only because users of the audit have confidence in his/her unbiased and professional expert judgement.

In relation to the subject matter everyone states that the subject matter should be verifiable. According to Bindenga (1973) this was the only condition necessary for an audit. If there is no evidence available no audit is possible. In accepting an audit engagement the auditor will always have to evaluate the auditability of the subject matter. The auditor should be capable of collecting evidence as required for assessing the compliance of the subject matter with the audit criteria. The audit evidence can come from internal and external sources and can be obtained in many different ways. The auditor may be confronted with various limitations in obtaining audit evidence. These may be inherent in auditing or be specific to the engagement. Limitations inherent in auditing may be different within each domain. Not performing all possible audit procedures due to cost/benefit considerations is an example of a limitation inherent in auditing. Because the auditor acts on behalf of the users of the audit and has to fulfil their reasonable expectations, the auditor cannot accept any specific limitations imposed by the person or organisation that has to account for his/its responsibilities. Limitations can also be imposed in relation to the audit techniques that can be used. In obtaining evidence, not every audit technique can be used. An example is being able to listen in to conversations (Wilschut, 1994a). Given the limitations in obtaining evidence in relation to the subject matter of the audit, the auditor must evaluate whether he/she can obtain enough evidence in order to be able to justify an opinion on the compliance of the subject matter with the audit criteria. If not, the auditor should not accept the engagement. There are too many uncertainties to provide an expert judgement. If an auditor were to accept such an engagement and provide an opinion although there is not enough evidence to substantiate the opinion, an over-expectation will be created with regard to the users of his/her opinion. This may eventually lead to a loss of confidence in these auditors (Limperg, 1926).

The fifth postulate can be described as follows:

5. The subject matter of audit is susceptible to verification by evidence.

Flint describes the requirement of standards of accountability. These standards of accountability can be used in the audit. Audit criteria are not always available in the form of standards. It is therefore more appropriate to speak about criteria rather than standards. Without audit criteria no audit is possible. The different audit objectives such as effectiveness or true and fair view may have different meanings for different people. It is therefore important that operational definitions are given of the audit objectives. In principle all parties within the relationship of accountability will have to agree with the audit criteria. If not, the audit will not fulfil all users' needs.

Postulate 6 can be described as follows:

6. Criteria for the duty of accountability are available or can be developed.

Finally, only Flint describes explicitly the necessity of clear and unambiguous reporting. Wallage states that the function of auditor should be fulfilled in such a way that users needs are fulfilled and that no expectations are created that cannot be substantiated by the audit process. This implicitly refers to the audit report. These postulates are based on Limperg's theory of rational expectations. As mentioned earlier the auditor should not arouse more expectations with his/her audit report than can be justified based on the audit work performed and the expertise of the auditor. Otherwise an expectations gap will occur, which eventually may lead to a loss in confidence in these auditors. An underlying assumption is that the audit judgement can be communicated in a clear way.

7. The audit judgement can be communicated in a clear and unambiguous way.

The purpose of an audit is to add value by expressing an opinion on characteristics of the subject matter such as its credibility, legitimacy or efficiency. Although many possibilities exist, the opinion is most often communicated by means of an audit report. The audit report must be clear and worded in an unambiguous way so that those parties that use the audit report understand the scope of its added value. The opinion that reflects the audit judgement is a crucial part of the audit report. If the auditors fail to communicate effectively, the audit purpose is frustrated (Flint, 1988).

The postulates form the basis of the concepts in relation to the elements of auditing.

3.4 Elements of auditing and related concepts

Wilschut discusses in his general theory of auditing the following elements:

- The audit domain;
- The auditor;
- The subject matter of the audit;
- The audit objectives;
- The audit criteria;

- The auditing process; and
- The audit report.

In the remaining part of sub-section 3.4 the elements and their related concepts are further elaborated.

3.4.1 Audit domain

Auditing is performed from the perspective of a certain domain in the sense of a discipline. The domain from which the audit is performed defines the scope and as such also the limitations of the professional judgement as a result of the audit. (Wilschut 1994a, p. 17, translated.

In the Netherlands limitations of the scope of the audit as a result of the auditor's expertise is part of the qualitative axiomatic restrictions (Blokdiik, 1988; Dutch Standards on Auditing (further referred to as RAC) 200.9 explanation). For the audit of financial statements, in the Netherlands (in addition to the International Standards on Auditing, in which this limitation is not explicitly mentioned) RAC 200.9 states that "the auditor does not have expertise in all matters that could be relevant for the audit of financial statements... The limits of the auditor's expertise will be determined by the extent to which he/she is able to form an opinion independently". Of course the auditor can use experts from different disciplines, but if an auditor were to perform an audit or has the sole responsibility for a multidisciplinary audit which goes beyond his/her expertise, the axiomatic restrictions due to his/her expertise would be so extensive that the ultimate judgement has little or no added value and as such will not fulfil the needs of the users of the audit report.

The domain in which the audit has to be performed should be determined by the needs of the users of the audit. The domain is the basic discipline in which the need exists and therefore in which the audit is performed. The auditor should have subject matter knowledge and auditing knowledge.

A growing number of internal and external stakeholders have become interested in (parts of) the organisation's activities or in the effects caused by the organisation's activities or services provided or even set requirements in relation to these issues. The interest of these stakeholders comes from different perspectives. If the interest is from an environmental perspective, users of the audit require some kind of assurance in relation to a subject matter within the environmental domain. Auditors that have expertise in the environmental domain therefore should perform the audit. If auditors from a different domain were to perform such an audit, too much axiomatic reservations or restrictions due to a lack of competence would exist. The audit opinion given therefore would have no added value and does not fulfil the needs of the users of the audit report. The possibility exists that the audit will require a multidisciplinary team. In such cases in theory several possibilities exist such as:

- a) the auditor from one discipline takes the lead and sole responsibility;

- b) the audit firm as a whole takes the responsibility and ensures that auditors with the necessary expertise (from different disciplines) perform the audit;
- c) the auditors from different disciplines sign to take joint responsibility; and
- d) the audit engagement is divided in sub-engagements for which auditors from each discipline are responsible.

IFAC, in ISAE 100.62 'Assurance engagements', allows for the possibility of multidisciplinary teams by stating that *"This Standard does not provide guidance on engagements where there is a joint possibility and reporting by a practitioner and one or more experts."*

Today, given that there is a need for audits in a variety of domains, the different possibilities need to be reconsidered.

3.4.2 Auditor

As mentioned in postulate 4, the function of an auditor exists only because users of the audit have confidence in the unbiased and professional expert judgement of the auditor.

Independence is one of the requirements for an unbiased judgement. Not every expert in a certain discipline is an auditor. According to Wilschut (1994b), the following four conditions have to be fulfilled:

- a) The discipline of the expert has to be an education at an academic (university) level; and
- b) In one or more domains related to that discipline, there are issues of vital importance, specifically in relation to the fact that conflicts of interest are possible between actors and third parties, including perhaps the general public; and
- c) The expert possesses expert knowledge about the auditing theory which is related to his/her discipline; and
- d) The expert is subject to rules of professional conduct, which aim to guarantee independence and unbiased professional judgement.

Auditors often have to face unknown situations. Education at an academic (university) level has the benefit that auditors learn a way of logical thinking that is applicable not only in existing situations but especially in new, unknown situations. Discussion is possible on the level of education. ISO and EMAS both have less stringent education requirements. The knowledge must be sufficient to perform an effective audit.

Users must accept the auditor's qualifications for fulfilling the audit function. This requires the authority conferred by professionalism. Essential features of a profession can be described as (Flint, 1988, Bindenga, 1973):

- a) a body of knowledge;
- b) a code of ethics;
- c) serving of vital needs.

The features of the audit profession add to the acceptance by the users of audit. The users of audit expect an unbiased expert judgement. Education, experience and some natural aptitudes like analytical ability add to expert judgement. An unbiased judgement is supported by the independence and integrity of the auditor. Having no financial interest or any relation with the client adds to an unbiased judgement.

In addition, the auditor should have a mental attitude in which any consideration of self-interest is absent. In order to collect the appropriate evidence the auditor not only needs competence but also investigative and reporting freedom. This requires authority to collect whatever evidence from whatever source he/she deems necessary (AAA, 1973).

These concepts are briefly discussed below.

Competence

An expert judgement requires competence. Audit competence enhances both knowledge and skill, which are the products of education, training and experience. This requires continued development of the individual and the profession.

The necessary education in order to become an auditor comprises (Flint, 1988):

- a) general knowledge; and
- b) knowledge of auditing principles; and
- c) knowledge of practices and procedures; and
- d) knowledge of the matters which are the subject of audit.

In describing general knowledge as a requirement, Flint (1988) agrees with the discussion of the basic foundation of auditing as discussed by Mautz and Sharaf (1961). Auditing requires a trained mind and the capacity for exercise of judgement. As such auditing draws on logic, mathematics and behavioural sciences. A broad general education cultivating the habit of systematic thinking and mental discipline combined with a basic understanding of the principal fields of knowledge and ability for expression and communication orally and in writing are an essential foundation.

Practices and procedures for auditing, in my opinion, may be different for each domain and therefore within each domain a specific body of knowledge has to be developed. The knowledge of matters that are subject to audit is necessary to put the issues with which they will be confronted in proper context and perspective, and to judge their materiality in relation to the audit objective.

The audit must carry authority. To carry authority all parties must have confidence in the audit. As Limperg (1926) states in his theory of rational expectations: confidence requires that the parties believe that the audit has been carried out competently and that the auditors are capable of understanding the matters being dealt with. Since relevant competence is essential for confidence, the public needs to have some means of distinguishing the competent from the incompetent. Audit competence requires auditors to have undergone a programme of dedicated education, training and experience. Auditors must therefore be able to demonstrate to the public that they have done so by obtaining a reputable qualification that vouches for the successful completion of such a programme. Passive monitoring is essential for confidence in

auditors to be maintained. Reported incompetence must be dealt with expeditiously and impartially in the public interest. Programmes of continuing professional education assist practitioners in maintaining competence and skill (Flint, 1988).

In discussing the concept of competence, Flint draws on the basic philosophy of Mautz and Sharaf and the theory of rational expectations of Limperg. Because auditing is a dynamic phenomenon it is important, in order to gain and maintain the confidence of users of audit reports, that both the audit profession and the individual auditor continuously monitor the perceived adequacy of their knowledge and skill. Changing needs of users and changes in the means (methods, techniques and tools) to observe and verify may lead to necessary changes in education and training.

Independence

Audit independence is achieved through the independence of auditors in their mental attitude, which governs their capacity for independent thought and action, impartiality and objectivity, in their organisational separation, and in their investigative and reporting freedoms. The correct mental attitude, independent thought and action, impartiality and objectivity and use of freedom of investigation and reporting are ultimately dependent on the personal qualities of the auditor (Flint 1988).

Elliott and Jacobson (1998a,b) however do not share the opinion that independence is a state of the mind. In their opinion when a regulator evaluates auditors' independence he/she is weighing whether an interest or set of interests represents an unacceptable risk of material bias with respect to the reliability of the financial statement information.

In my opinion independence is a state of the mind, but its outcome can only be measured by means of the actual actions or decisions taken. The state of independence is influenced by external circumstances. All kind of relations with the parties involved that might frustrate the auditor's (perceived) independence should be avoided. The state of the mind influences the ultimate actions of the auditor. As such a difference may occur between intended behaviour and actual behaviour. The state of independence influences the state of the mind of the auditor and as such may cause biased actions or decisions.

Mautz and Sharaf (1961) distinguish between three dimensions of independence:

- a) programming independence: freedom from control or undue influence in the selection of audit techniques and procedures and in the extent of their application;
- b) investigative independence: freedom from control or undue influence in the selection of areas, activities, personal relationships, and managerial policies to be examined;
- c) reporting independence: freedom from control or undue influence in the statement of facts revealed by the examination or in the expression of recommendations or opinions as a result of the examination.

In my opinion, the most important dimension of independence, being the independence of audit judgement, is implicitly stated within these three dimensions. During the acceptance of the engagement, the auditing process and the reporting, the auditor continuously has to make

judgements. It is important that these judgements are free of any bias due to a lack of independence.

The need for auditing exists because, within a (perceived) relationship of accountability, one or more parties perceive a (potential) conflict of interest and the subject matter is of too great significance and/or too remote and too complex. In order to add value the auditor must be independent from all parties involved in the (perceived) relationship of accountability. If the auditor is not independent, users may have little or no confidence in his/her opinion.

The objective of an audit is to provide an adequate basis for informed judgement by those to whom accountability is due or who have a need for and a right to reliable information. The auditor only reports an authoritative opinion on a subject matter. The responsibility as to what action follows rests with a supervisory board e.g. the board of commissioners (Flint, 1988; Wilschut, 1998).

A distinction is made between independence in fact and independence in appearance. Independence in fact exists when the auditor maintains an unbiased attitude throughout the audit. Independence in appearance is the result of users' interpretations/perceptions of this independence. Even though the auditor may be independent in fact, he/she should avoid circumstances where users might perceive that he/she is not independent. Such perceptions may for instance be due to organisational arrangements within the audit firm itself or between the auditor and the auditee. An example of an organisational arrangement within the firm may exist when, within the same audit firm, one division is giving advice on an environmental management system, while another division is certifying the same environmental management system. As such users may perceive a conflict of tasks within the audit firm. The auditor himself can also perform additional non-audit engagements such as advising organisations in relation to a certain subject matter. The auditor should avoid giving advice that might be of influence on the policy of his client. An example of arrangements between the auditor and auditee that may influence the user's perception of independence are those situations in which the auditee itself makes the selections and arrangements for the audit engagement. By involving the users of audit in the process of selection of the auditor and the arrangements with the auditor such perceptions can be avoided or at least be decreased.

The concept of independence is a relative concept. If the audit has sufficient authority for its intended purpose without absolute independence, or the appearance of it, or is added to by the users by reassurance from other sources, then the social purpose of an audit is being served (Flint, 1988).

The more remote the users are from the auditor and from the subject matter of the audit, the more they must rely on the organisational arrangements, the public reputation of the auditor and the public perception of the auditing profession to reassure them as to the independence of the audit in a particular situation. In practice, the (financial) audit profession has set certain rules of conduct and monitors their application in practice. To improve transparency for users of audits it is important that similar rules of conduct exist for all kind of auditors within different domains.

Professional ethics

Professional ethics are a special application of general ethics and are based on the general theory of ethics as part of philosophy.

In addition to competence and independence, the authority of the audit is sustained by the status of auditing as a profession and by the ethical standards of auditors (Flint, 1988).

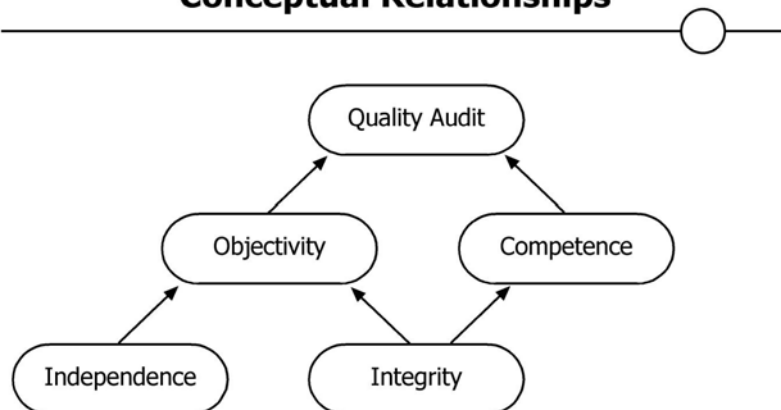
Integrity is part of the concept of ethics. Ethics can be described as a set of moral principles or values. Examples of ethical principles are honesty, integrity, loyalty, respect for others and responsible citizenship. The auditor's moral responsibility goes beyond legal and professional responsibilities (AAA, 1973).

Quite often objectivity is mentioned as a separate concept. Objectivity means that an auditor must be fair and must not allow any prejudice or bias to override his/her objectivity (IFAC, 1998a). To be objective is in my opinion unrealistic and as such the wording may create misunderstandings. Due to personal perceptions, especially in relation to evaluations, one can never be objective. What is ultimately of importance is that the auditor's judgement is as unbiased as possible. Professional ethics aimed at impartiality, integrity and independence contribute to an unbiased judgement.

Elliott and Jacobson (1998a) show the relationships between the concepts of competence, objectivity, independence and integrity (see figure 3.2). To render a quality audit an auditor must have objectivity (which limits bias) and competence (so the right facts and conclusions can be elicited and drawn). The auditor's objectivity (freedom of bias) would be at its maximum if the auditor has perfect integrity. Even if the auditor had interests that would undermine objectivity in a person of lesser integrity, they would not impair objectivity in a person with perfect integrity. In this way integrity can help assure objectivity, giving the public protection in addition to the absence of interests that could cause bias (independence). Independence is a matter of interests that might cause bias; objectivity is an intellectual quality (degree of absence of bias), whereas integrity is a moral quality.

Figure 3.2

Conceptual Relationships



Source: Elliott and Jacobson, 1998b, p.18

3.4.3 The audit engagement

Different parties can issue the engagement to audit a certain subject matter. Such an audit engagement can be mandatory or voluntary. For audits that are performed frequently, mandatory or not, in time a certain norm will be developed regarding the scope of the engagement. Changing the scope of such audits based on subjective considerations of the client will in such situations lead to not fulfilling the expectations of the users. The auditor therefore should not accept such subjective scope limitations.

In this paragraph the following elements of the audit engagement are discussed:

- a) subject matter of the audit;
- b) audit objectives;
- c) audit criteria and related indicators.

3.4.3.1 Subject matter of the audit

The subject matter of the audit can be the policy, plans, systems, actions (behaviour), results¹⁹ of these actions (performance) or information about these items, all in relation to different domains.

In the past the subject matter of the audit was restricted to financial information. Time however has shown that assurance is required within more different domains and within these domains on different kind of subject matters other than just information. Examples are the audit of electronic data processing (EDP), the (internal) audit of environmental management systems, the certification of quality systems (ISO 9000) and environmental management systems (ISO 14000). Not only the results of performance are of interest to stakeholders, but requirements may be set even in relation to policy and plans and organisations have to account for the extent to which they comply with these requirements. The audit therefore is no longer restricted to financial information, nor is the performance of audits restricted to accountants.

In relation to the subject matter a distinction can be made between the state of affairs and a reflection of the state of affairs (Wilschut,1987a,b). An example of the subject matter that is the state of affairs is the environmental management system itself. By means of observation the auditor has formed an opinion on for instance the effectiveness of this environmental management system. An example of the subject matter that is a reflection of the state of affairs is the environmental report in which for example information is given on environmental impacts or on the environmental management system. An audit of which the

¹⁹ Reporting on results concerns both reporting on intended and unintended results. Further the information concerns both the results in the short term as well as those in the long term and where possible also the ultimate impact on society as a whole.

subject matter is the reflection of the state of affairs can be defined as an information audit. The auditor collects evidence on the state of affairs during which he/she, depending on the quality of internal control, may rely on the expertise within the organisation. The judgement on the reflection of the state of affairs is divided into the following stages (Wilschut, 1987a,b, 1989b):

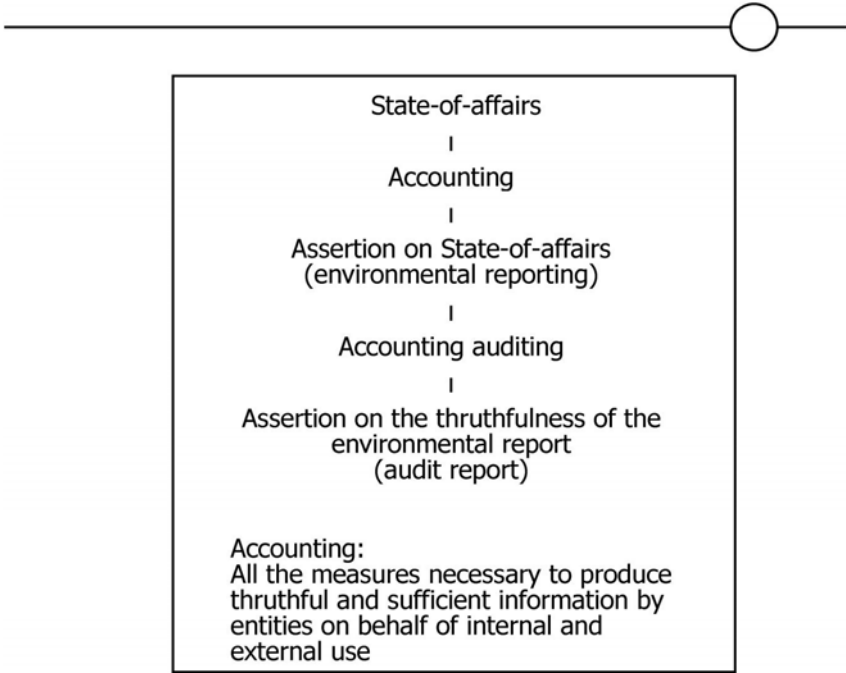
- evidence on the state of affairs;
- evidence on the reliability of the source data based on the state of affairs;
- evidence on the compilation of the environmental report based on this data;
- evidence on the sufficiency of presentation of the state of affairs.

Figure 3.3 shows these different stages.

The distinction between the state of affairs and the reflection of affairs is not only important for the scope of the engagement, but also for the interpretation of the audit judgement. If information is the scope of the audit, an opinion is only given on the reflection of the information and not on the state of the affairs.

Figure 3.3

An opinion on a reflection



Source: Wilschut (1989b, translated)

3.4.3.2 Audit objective

In setting the audit objectives of an audit engagement, a distinction can be made between institutionalised engagements, that are often a mass-produced service such as the audit of the

financial statements, and more individual audit engagements. For institutionalised audit engagements, the auditor makes certain assumptions regarding the user's expectations. Limperg already questioned in 1926 whether clients were free in determining the purpose of the audit if they are listed on the stock exchange. In fact he questions whether the client is free to choose the objective of audits that are performed frequently and of which users of audits already have certain expectations. If clients are free to choose the objectives of such engagements, their engagement might differ from what the users of the audit report might expect from the auditor. As such, an expectations gap may occur, which will frustrate the added value of an audit.

In relation to the more individual audit engagements or those engagements (such as the audit of environmental reports) that are not institutionalised yet the objectives of auditing will normally be set in negotiation with clients, but are also influenced by regulators and other stakeholders with an interest in the organisation. Preferably the client consults its stakeholders before defining the audit engagement. The client is free to choose the purpose of the audit, but has no say on the scope of the audit procedures to be performed. This is the expertise of the auditor and not of the client.

In relation to the different kinds of subject matters, different audit objectives are possible. Examples include effectiveness; efficiency; compliance; integrity; reliability; completeness and accuracy. The objectives of an audit are closely related to the subject matter of an audit. In relation to information in reports for accountability purposes, the objective of auditing is not the compliance of the (financial) statements with the records but the accuracy of the reflection of the organisation in the (financial) statements (Limperg, 1926). Nowadays this objective is stated as 'true and fair view' or 'presents fairly, in all material respects'. In relation to reports for accountability purposes a reflection of the state of affairs is given. The person that has to account for his/her responsibilities, implicitly but sometimes also explicitly, makes certain assertions. During the audit process the auditor has to obtain evidence that supports the assertions made. The assertions therefore form the audit objectives. Based on the general objective 'true and fair view', various sub-objectives have to be recognised. Most assertions, however, come in groups rather than individually; this makes their recognition somewhat more difficult. Part of an auditor's task is to recognise the subsidiary assertions contained within any proposition. Only if these are identified can evidence be obtained to support or contradict each one. Failure to identify all subsidiary propositions is a failure to recognise the full scope of the audit problem (Mautz and Sharaf, 1961).

Within the audit objective different levels of required assurance are possible. Once the objectives of an audit are set, the level of assurance to be provided has to be set. In its Standard on Assurance Engagements, IFAC (2000) distinguishes only between a high level of assurance (referred to as audit) and a moderate level of assurance (referred to as review). The high level of assurance can be provided when the auditor is able to perform extensive procedures on a subject matter, which is capable of reliable measurement, using the objective criteria and obtains sufficient appropriate evidence to reduce the risk of an inappropriate conclusion to a low level. For some subject matters this is not possible. IFAC

mentions a qualitative subject matter that is evaluated through suitable, but subjective criteria as an example. IFAC (2000) distinguish between two situations that result in a moderate level of assurance:

- the subject matter is capable of reliable measurement using objective criteria, but the auditor applies procedures of a different nature or less extensive procedures than in audit. The resulting evidence, while lower in quantity or quality than would be required for audit, may be sufficient to support a moderate level of assurance;
- the subject matter measurement is less reliable because suitable criteria are less objective. In some situations the subjectivity of the criteria may cause the measurement of the subject matter to be less reliable. This may, regardless of the procedures performed, result in an inability to obtain sufficient and appropriate evidence to support a high level of assurance. However, appropriate procedures may be planned and performed to obtain the evidence necessary to support a moderate level of assurance.

Within IFAC there are two views on deciding the level of assurance that can be provided. These are the interrelationship between variables and the work effort view. In the view based on the interrelationship the variables that have to be taken into account are (IFAC, 2000):

- a) subject matter: some subject matter is inherently more capable of reliable measurement and support by relatively conclusive evidence. All else being equal, a higher level of assurance can be provided about an historical and quantitative subject matter than about a more subjective and qualitative subject matter;
- b) criteria: while all criteria need to be suitable, depending on the nature of the subject matter some criteria provide a means for reliable measurement of the subject matter. A lower level of assurance will be provided if the criteria are qualitative rather than quantitative;
- c) process: a major determinant of the level of assurance that can be provided is the nature, timing and extent of the procedures adopted by the auditor to gather evidence on which to base the conclusion. The higher the level of assurance to be provided, the more comprehensive the procedures performed have to be;
- d) quantity and quality of evidence: the auditor will, through the application of appropriate procedures, seek to obtain sufficient appropriate evidence as the basis for the provision of the level of assurance. In conjunction with the nature and form of the subject matter, criteria and procedures, the reliability of the evidence itself can impact the overall sufficiency and appropriateness of the evidence available.

In the work effort view, the level of assurance is determined in the first instance on the user's needs (including cost considerations) and secondly by the procedures performed to obtain sufficient appropriate evidence. The criteria and subject matter are viewed as prerequisites to the engagement. Once it is decided that the criteria and subject matter support an assurance engagement it is the work effort that determines the level of assurance. The work effort (the nature, timing and extent of the procedures performed) determines the level of assurance.

A high level refers to the highest reasonable level of assurance that can be provided on a certain subject matter.

Absolute assurance is in general not obtainable due to limitations that are inherent in auditing such as:

- the auditor does not have expertise in all matters that could be relevant for the audit;
- the auditor cannot continuously be present at all places where events which may have some bearing on the subject matter of the audit may occur;
- events which because of their nature are not reflected in the accounts or facts that are kept out of the accounts by management knowingly;
- cost/benefit considerations in relation to an audit may lead to the use of sampling techniques;
- the nature of much of the evidence is persuasive rather than conclusive; and
- the use of judgement in the gathering of evidence and drawing conclusions based on that evidence.

Public perception, however, of any difference between the types of engagement, especially between audit and review, is generally very poor (Limperg Instituut, 1998). As a result, it is important for new kinds of audit engagements to have more interactions with the users of the audit. In this way the market may define differences in engagements and the required assurance. It may be argued that only the highest level of assurance that reasonably can be provided on a certain subject matter should be given. This would be clearer to the users of audit.

3.4.3.3 Audit criteria

“Audit criteria are necessary to assess whether the subject matter complies with the requirements as set by means of the audit objectives. The audit criteria therefore are on the same level as the audit objectives. The audit criteria can vary from authoritative standards to soft reference material. In the most ideal situation audit criteria are authoritative standards or similar criteria. However, these are not always available. As such the audit is not a check on compliance with the requirements, but a process of professional judgement. Professional judgement always requires some form of criteria no matter how soft they are. Possible sources of audit criteria are: professional literature; authoritative statements of the professional body; law and regulations; jurisprudence; data from the past; comparative situations at the moment; and last but not least, requirements as set by the client.”
(Wilschut, 1994a, p.18 translated).

A consensus must exist as to the criteria against which the (propositions deduced from the) subject matter can be evaluated.

IFAC (2000) distinguishes between established criteria and specifically developed criteria. Established criteria are those embodied in laws or regulations, or issued by recognised bodies of experts that follow due process. Specifically developed criteria are those identified for the purpose of the engagement and which are consistent with the engagement objective. It is important for criteria to allow for reasonably consistent evaluation. In determining whether criteria are suitable, the following characteristics are assessed: relevance, reliability, neutrality, understandability and completeness (IFAC, 2000).

In my opinion, where applicable, the requirements set by those to whom the organisation has to account are the most important audit criteria. This also enhances the authority of the audit. Ideally all parties involved in the relationship of accountability should agree on the criteria to be used. Where users constitute a large and heterogeneous audience such information may be obtained rather indirectly and collectively (AAA, 1973).

In addition to the criteria the auditor needs certain yardsticks to facilitate the assessment to what extent or how often a criterion can be violated before there is a non-compliance.

For example, the system is effective when no shutdown occurs. The related yardstick is then zero. The level of the yardstick is closely related to the materiality of the subject matter. The more material, the more demanding the yardstick will be.

Expectations of parties involved in the accountability relationship on subject matters may change over time and therefore the audit criteria will change over time. The criteria may also change or become more specific as a result of research and experience.

The principal sources of criteria are likely to be:

- laws and regulations;
- jurisprudence;
- specific criteria developed by the client;
- specific criteria developed by the users;
- professional literature;
- experience from the past;
- comparable situations.

In addition to the general audit criteria, specific audit criteria will emerge during the audit (Wilschut, 1994a). These are criteria available within the company that is audited. After the reliability and acceptability of these criteria has been assessed they can be used. Examples include budgets and an environmental impact register.

3.4.4 Audit process (collection and evaluation of audit evidence)

“When the subject matter is set and the audit objectives and audit criteria are derived from the subject matter, the auditor knows the scope of his/her audit judgement and the actual audit process can start. The auditor has to collect evidence. The question is: What kind of evidence needs to be collected? To answer this question expertise within the domain concerned is required. Only an auditor that has expertise within the domain concerned knows on the basis of the purpose of the evidence collection what kind of evidence needs to be collected, the related potential risks, the available alternatives etc. In relation to data collection the auditor needs to have a set of instruments in the form of techniques, methods and tools. Techniques concern combinations of elementary activities, in a certain form, in order to achieve a certain goal. Given a certain goal, different techniques are possible. Methods relate to the extent to

which and/or the time in which techniques are used, if necessary by using selection criteria for the material to be observed.

Tools relate to the physically observable and manageable aids such as handbooks, questionnaires, audit protocols, and computers with related software. Techniques, methods and audit criteria can be documented in audit protocols, software and the like and as such are embodied in techniques. Especially by using software very advanced and intelligent tools can be created.” (Wilschut, 1994a, p. 18/19, translated)

3.4.4.1 Due audit care

The audit process consists of collecting audit evidence and evaluating that evidence. Once the auditor, based on his/her knowledge in the domain, has decided on the kind of audit evidence to be collected, he/she has to decide how he/she will obtain this evidence. The kind of audit work to be performed is determined by the task. The opinion of the auditor only has relevance to the user because of the competence of the auditor. Implicitly the reader expects that the auditor has performed all the work that was necessary to formulate the opinion given in the audit report. Based on his/her expertise, the auditor determines which audit procedures have to be performed in order to collect sufficient evidence to support the audit report given (due audit care).

Neither the auditor nor the client has any freedom to change (limit or extend) the audit work to be performed based on subjective considerations. The kind and extent of audit procedures to be performed is determined by objective considerations, the technical requirements, which based on the purpose of the audit are required of the audit work of the auditor. Not the subjective decisions of the auditor, but the scientific approach based on theory and practical experience determines the kind and extent of audit procedures to be performed (Limperg, 1926, translated).

Audit evidence is obtained through the application of audit techniques in the form of procedures designed to fit the specific situation. Examples of such techniques are physical examination and count, confirmation, examination of authoritative documents and comparison with the record, inquiry, correlation with related information; and observation of pertinent activities and conditions.

Given the techniques, different methods can be applied to obtain the audit evidence. The most important methods are (Wilschut, 1994a):

- full observation;
- sample observation:
 - random/statistically;
 - random/not statistically;
 - select (whether or not announced);
 - observation during a certain time span;

- observation based on the characteristics of the material to be observed.
- observation based on risk-analysis;
- combinations of the methods mentioned above.

For all these methods, a distinction can also be made in principle between observation real-time and observation afterwards.

3.4.4.2 Evidence

The auditor has to decide whether, given the audit objective, sufficient evidence has been collected. The significance of the (sub) audit objective, the quality of evidence and the extent to which a combination of evidence supports a certain (sub) audit objective will influence this decision. Previous experience may also be of influence.

Arens and Loebbecke (1997) distinguish between four determinants of the persuasiveness of evidence:

- **Relevance:** the evidence must pertain or to be relevant to the audit objective that the auditor is testing before it can be persuasive. Relevance can be considered only in terms of specific audit objectives. Evidence may be relevant to one audit objective, but not to another.
- **Competence:** competence refers to the degree to which evidence can be considered believable or worthy of trust. If evidence is considered highly competent, it is a great help in persuading the auditor that the subject matter complies with the audit criteria. Competence only deals with the audit procedures selected. Competence cannot be improved by selecting a larger sample size or different population items. It can only be improved by selecting audit procedures that contain a higher quality of one or more of the following characteristics:
 - **independence of the provider:** evidence obtained from a source outside the entity is more reliable than that obtained within and documents that originate from outside the client's organisation are considered more reliable than those that originate within the organisation and have never left the client's organisation;
 - **effectiveness of the client's internal controls:** if a client's internal controls are effective, evidence obtained is more reliable than if they are weak;
 - **auditor's direct knowledge:** evidence obtained directly by the auditor through physical examination, observation, computation and inspection is more credible than information obtained indirectly;
 - **qualification of the individuals providing the information:** although the source of information is independent, the evidence will not be reliable unless the individual providing it is qualified to do so. Also, evidence obtained directly by the auditor may not be reliable if he/she or she lacks the qualifications to evaluate the evidence. For example, examination of an inventory of diamonds by an auditor not trained to distinguish between diamonds and glass would not provide reliable evidence on the existence of diamonds;

- degree of objectivity: objective evidence is more reliable than evidence that requires considerable judgement to determine whether it is correct. In evaluating the reliability of subjective evidence, the qualifications of the person providing the evidence are important;
- Sufficiency: The quantity of evidence obtained determines its sufficiency; and
- Timeliness: The timeliness of audit evidence can refer either to when it is accumulated or to the period covered by the audit.

According to IFAC (2000) the quality of evidence available to the professional auditor will be affected by the nature of the subject matter and the quality of the criteria, and also by the nature and extent of the procedures applied by the auditor.

3.4.4.3 Process of audit judgement

The whole audit process is aimed at formulating an opinion as to whether the subject matter complies with the audit criteria. Besides this overall judgement the auditor makes various judgements during the audit process. He/she has to decide on the kind of evidence that has to be collected and on the methods, techniques and tools to be used to collect the evidence. Once the evidence has been collected he/she has to decide whether it is sufficient to substantiate an opinion on the compliance of the subject matter with the audit criteria. In order to make judgements the following actions are taken (Hogarth, 1991):

1. Task definition
2. Internal information acquisition (memory);
3. External information acquisition;
4. Information processing;
5. Output;
6. Action
7. Outcome.

In general audit decisions are influenced by (Ashton, Kleinmuntz, Sullivan and Tomassini, 1988):

- Audit evidence:
 - the substantive view of evidence, which tends to emphasise the source of the evidence and the procedures by which the evidence is collected;
 - the generic view of evidence, which includes more generic features of audit evidence such as its amount, direction, reliability, consistency, redundancy, corroboration, diagnosticity and generic presentation features, such as order, degree of aggregation, aspects of presentation format (oral, written, numerical, non-numerical);

- Audit task dimensions, such as the group, organisational, and professional constraints and opportunities such as time pressure, peer pressure, career development considerations, audit risk and litigation considerations, feedback about past performance and justification or rationalisation of past judgements. Specific features of audit tasks can also be important such as the extent to which the task is novel or non-recurring or the extent to which the audit tasks are structured by the technology employed in audit firms;
- Auditor characteristics, such as ability, knowledge, experience, preferences, and values and more specific features of cognition such as memory, attention, perception, and the implicit theories or hypotheses that auditors formulate through experience or other means.

Even though auditors are independent, the outcome of their process of audit judgement may be different. The literature on human information processing in particular suggests a number of possible reasons for judgement differences. There has been extensive research into the effect of biases caused by heuristic procedures (rules of thumb) on judgements. Heuristic procedures are commonly used by human decision-makers to reduce tasks, requiring complex inferences, to more manageable proportions. However, the use of these heuristics implies the use of cognitive activity and weighting of variables that differ from those identified as ideal in normative models of how decisions should be made and they may lead to systematic decision errors (Gwilliam, 1987).

Tversky and Kahneman (1974) describe three such heuristics that may affect judgements.

These are:

- Representativeness: judgements are made by means of similarity to a stereotype. This may lead to audit inefficiency and overauditing because auditors will recognise a large number of stereotypes, either in terms of company variables or personal weaknesses, but lose sight of the prior probability that for instance management fraud is in fact a comparatively rare event;
- Availability: judgements are made viewing the frequency or probability of an event occurring in terms of the ease with which similar events are brought to mind. Consequently the probabilities of more easily remembered sensational events are likely to be overestimated, for instance the incidence of major embezzlement and other spectacular events;
- Anchoring and adjustment: judgements in which new information is evaluated by means of using existing information as a basis for evaluation. Auditors who base the extent of their current year audit tests on those carried out the previous year may not revise these sufficiently in the light of changed circumstances.

In order to increase the quality of auditing judgement differences have to be as small as possible and therefore heuristics must be avoided.

3.4.5 Audit report

The auditor can report his/her conclusion in different ways. Most often the auditor will present his/her conclusions by means of a written audit report. In this way the auditor accounts for the responsibility that is given to him: to form an opinion as to whether the subject matter is in conformity with the audit criteria. The information given in the audit report therefore is not only the required opinion of the auditor, but also the account of the task given to him.

The audit report should not arouse more confidence than is justified by the audit work performed (Limperg, 1926). Audit reports need to comply with certain quality characteristics in order to be useful for the readers of financial, environmental, social or triple-bottom-line reports. In general such characteristics may enhance (based on FEE 1999b; IASC, 1996; FASB, 1980)²⁰:

- Understandability: the information provided in the audit report has to be understandable for the readers. It should be presented in such a way that an average reader is able to interpret the information in the way it is meant to be interpreted. This implies avoiding too much specific technical terms;
- Relevance: information is relevant when it is capable of making a difference in a decision by helping the users to evaluate past, present or future events or confirming or correcting their past evaluations. Information is relevant to a situation if it can reduce uncertainty about the situation. The audit report should only mention information that is relevant to the users. In addition, timeliness is important, the information should be available before it loses its capacity to influence decisions. Therefore the audit report date should be as close as possible to the financial, environmental, social or triple-bottom-line report date;
- Reliability: information has the quality of reliability when it is free from material error and bias and can be depended upon by users to represent faithfully that which it either purports to represent or could reasonably be expected to represent. The information in the audit report therefore should be reported in such a way that the information is accurate, neutral, prudent and complete. In order to add to the evaluation of completeness a fixed content of the audit report has to be agreed upon. In addition, only information that is verifiable should be included. Personal views of auditors therefore should not be included in the audit report; and
- Comparability: users must be able to compare the information with similar information about other companies and with similar information about the same company for some other period or some other point in time. This has implications for the structure of the audit report. The structure and topics to be included should be similar for different kinds of audit. Only the contents of the topics can vary. This facilitates the reading and comparing of the audit reports. In the beginning the subject matters, audit objectives and audit criteria that are used may vary, but the similar

²⁰ Although written for financial information, the characteristics are applicable to information in general.

structure of the audit report is already a first step towards comparability of audit reports.

Comparability of audit reports implies a fixed structure of topics to be included. In general, an audit report may contain the following topics:

- title;
- addressee;
- the name of the organisation of which a subject matter is audited;
- the subject matter;
- the audit objectives;
- responsibility of the party responsible for the subject matter;
- responsibility of the auditor;
- the criteria that have been used during the audit to assess whether the audit objectives have been met;
- a description of the audit work performed and its purpose ;
- a description of the limitations of the audit;
- a clear conclusion paragraph which creates no more expectations than can be justified on the basis of the audit work performed and the expertise of the auditor or audit team;
- signature/name of the auditor(s)/firm;
- discipline in which the auditor has his/her expertise;
- the auditor's address;
- the audit report date.

Once standards are developed (e.g. for the contents of environmental reports and the audit work to be performed) and users of audit reports are aware of these standards, a reference to these standards can be made rather than describing the criteria used and the audit work performed.

According to Limperg (1926) a positive description of the audit work performed in the audit report is not sufficient to explain the limits of the auditor's responsibility. For an accurate interpretation the reader should have competence in the audit field. Only a negative description, the description of the work not performed, will be sufficient. Omissions in the audit work should be reported.

In my opinion, using a qualification implies that there is a standard for the audit work to be performed or the objective of an audit. Also a negative description of the work not performed is only possible if within society a certain standard exists for the audit work that has to be performed, given a certain subject matter and audit objective. For most audit engagements in domains different from that of financial accounting, however, these standards do not yet exist. Therefore using a negative description only will not be sufficient.

For new kinds of assurance engagements such as auditing environmental reports, the auditor may meet limitations that should be described in the audit report. These limitations will

influence the opinion expressed in the conclusion paragraph. Opinions such as ‘true and fair view’, may at this early stage, be difficult to justify.

Further, the expertise of the auditor provides the boundary of the domain from which the assurance is provided. Therefore, the readers should also be able to obtain some knowledge of the expertise or profession of the auditor.

The audit of non-financial services, such as of environmental reports, will often require a multidisciplinary approach carried out by a team in which different professions are represented and which has an appropriate management structure. The multidisciplinary approach has consequences for the audit report. An important issue is whether there should always be one lead auditor who carries full responsibility for the audit and signs the opinion. In such cases, the lead auditor has to decide to what extent he/she has, and is able, to rely on the work of other experts, which may or may not form part of his/her team, or of the internal audit department.

There are several possible consequences for the audit report, for example:

- a) the auditor from one discipline takes the lead and sole responsibility and signs the audit report, no reference to the work performed by auditors from other disciplines is made;
- b) the audit report is signed by a firm that employs auditors from different disciplines;
- c) the auditor from one discipline takes the lead and sole responsibility and signs the audit report, but a reference is made to the audit work performed by auditors from other disciplines;
- d) the auditors from different disciplines together sign the audit report and take joint responsibility. No reference to individual responsibilities is made in the audit report;
- e) the auditors from each discipline discuss their responsibilities in the audit report and together sign the audit report; and
- f) the auditors from each discipline sign off their own audit report.

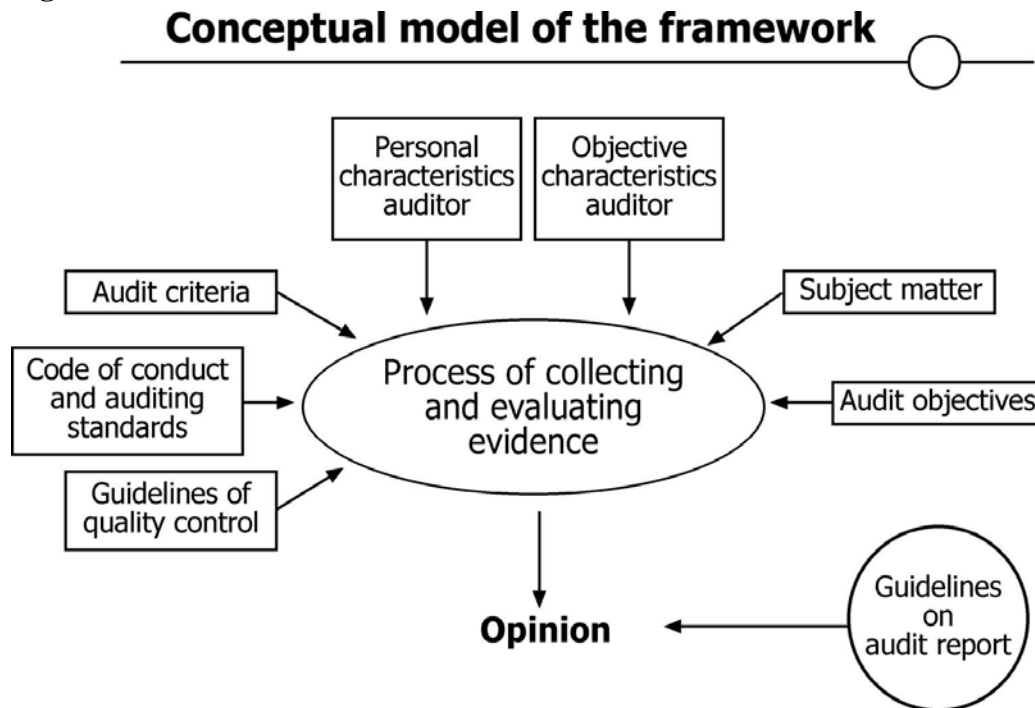
The existing (financial) standards on auditing, both international and Dutch, however, only allow for audit reports that are signed by the accountant, in which he/she takes the full responsibility for the audit. In principle, it is not permissible to refer to work performed by other accountants or other professionals that has been used. ISA 100.62 however opens up this possibility for the future by stating that “this standard does not provide guidance on engagements where there is a joint responsibility and reporting by a practitioner and one or more experts”.

3.5 Conceptual model of the framework

This paragraph describes a conceptual framework of the theory of auditing . The model is based on the theory of auditing as explained by Wilschut (1985a). The basis of the framework is formed by the postulates and concepts and explains the need for auditing and sets out the aspects that are important in forming an audit opinion (postulates and concepts).

Figure 3.4 shows the conceptual model of the framework.

Figure 3.4



As derived from the postulates, the conditions creating the need for an audit include:

- relationship of responsibility and resulting relationship of accountability;
- possible perceived conflict of interests;
- the subject matter is of too great significance, too remote and or too complex;
- possible perceived benefit of the audit.

Conditions for making audit judgements:

- auditor:
 - competence
 - independence
 - professional ethics and codes of conduct
 - guidelines for the organization and the quality and integrity of personal;
- engagement:
 - subject matter, identifiable and verifiable;
 - audit objectives, a clearly defined description, including the depth of the audit;
 - audit criteria and related indicators, agreed upon by parties involved in the relationship of accountability.

In order to increase the quality of the audit process it is important that auditors comply with:

- criteria for the contents of the work to be performed;
- criteria for the documentation of the work being done.

In order to increase consistency in reporting the audit opinion it is important that auditors comply with:

- criteria for the reporting elements to be included;
- criteria for the ways the opinion is made public.

The audit process level of the framework explains what kind of work the auditor has to perform given the different audit engagements. The relation between the kind of engagement, the different stages in auditing and the kind of techniques, methods and tools available are explained in more detail.

Various related stages can be distinguished in the audit process of collecting and evaluating evidence.

Depending on the scope of the audit not all stages have to be passed through. For example if the subject matter is a system, verification is not necessary. Also, phases 1 to 4 do not need to be performed in chronological order. Feedback between the stages is possible. For the audit of information Wilschut (1985a) distinguishes between the following stages:

1. Exploration

In the exploration stage the engagement is analysed in terms of the subject matter of the audit, the audit objectives and the audit criteria. The main objective of this stage is to establish that sufficient specific audit criteria are available within the organisation to be examined to be able to issue, in principle, an unqualified audit report (auditability). During the process of exploration the design of the process of internal control within the organisation is taken into account. Also, the assumptions used for measurement are explored. Evidence is collected as to whether the specific audit criteria available within the organisation comply with the available general audit criteria. If they comply they can be used in the other stages as specific audit criteria.

2. Inspection

The main objective of this stage is to determine that within the organisation to be examined enough source data are available that can be assumed to reflect accurately and completely the events of the organisation to be examined (reality). In the inspection stage, the auditor assesses whether within the organisation the process of internal control exists as it is described in the previous stage and whether it operates in the way described in the previous stage. The system is assessed in order to provide an answer on the main question as to whether the source data reflect reality in an accurate and complete way.

3. Verification

The main objective of this stage is to determine that the report is compiled in a reliable way, based on the source data collected in a way assessed in phase 2 (reliability). In this stage the results of the system are verified.

4. Evaluation

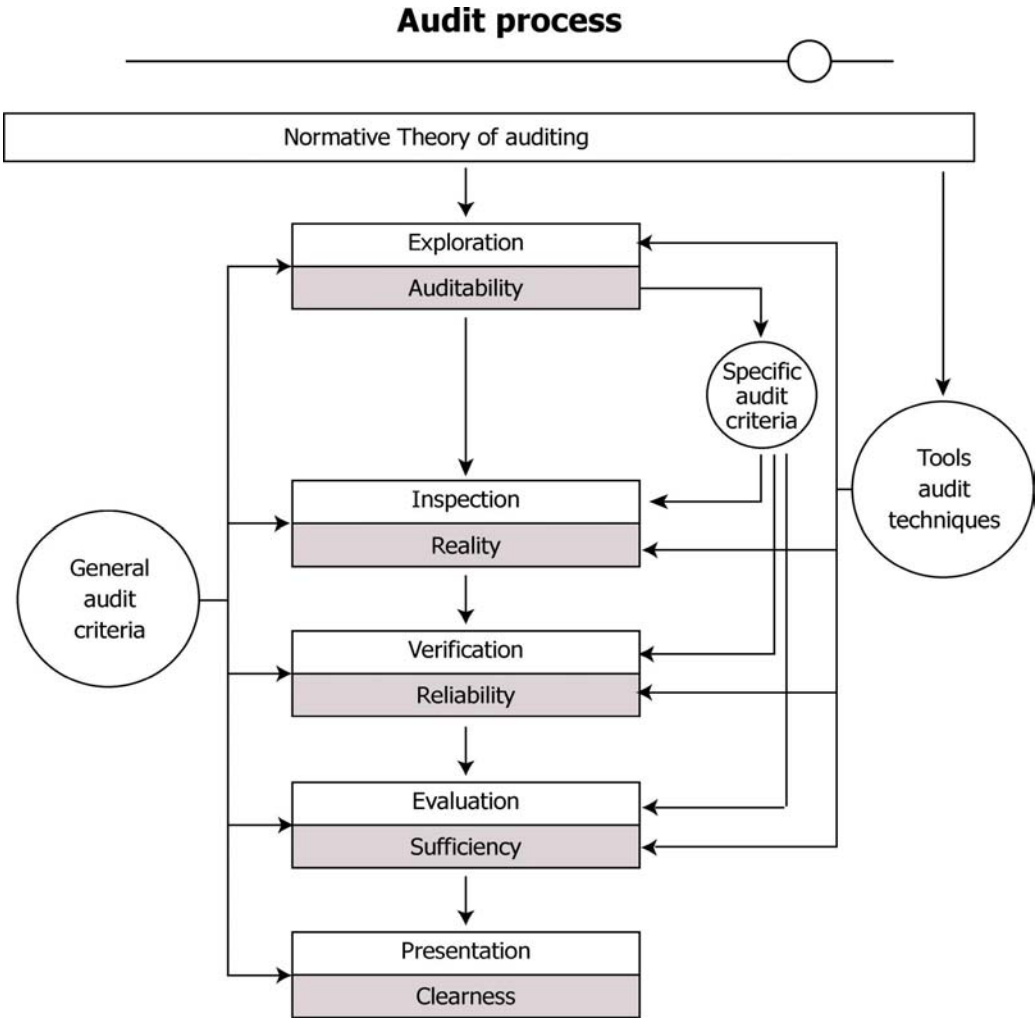
The main objective of this stage is to establish that the report is drawn up in such a way that in principle users should be able to derive the information necessary to form their judgement (sufficiency). Evaluation is mainly performed against general audit criteria.

5. Presentation

The main purpose of this stage is reporting the audit judgement in such a way that it is clear to the users (clarity).

Figure 3.5 shows the conceptual model of the audit process.

Figure 3.5



Source: Wilschut, 1985a/1994a

If the subject matter is for instance an electronic data processing system a similar approach is applicable, but the stages verification and evaluation are not important if the subject matter is not information.

3.6 Conclusions

In this chapter a framework was developed for a general theory of auditing. The relationships of responsibility are changing and as such the relationships of accountability are changing. Organisations are confronted with a greater array of stakeholders that are interested in all kinds of different impacts that may be related to the organisation's activities, products or services. These impacts may be financial, environmental or social (including ethical). In practice, an increasing need for all kinds of audit engagements exist. The subject matter of such engagements may be the policy, plans, systems, behaviour or performance, all in relation to different domains. Also, audits are performed by various professionals and experts. This chapter identifies what all these different kinds of audits might have in common. Philosophers on auditing such as Mautz and Sharaf (1961), Flint (1988) and Wilschut (1985-1999) have provided important building blocks for such a framework. Further, IFAC/IAPC has published a framework for assurance engagements that addresses different kinds of elements that all assurance engagements have in common.

Auditing is a synoptic science, which means that the theory on auditing borrows from other sciences. The basic roots can be found in the philosophy of logic, knowledge, mathematics and metaphysics. In relation to the ways of obtaining evidence and drawing conclusions, auditing theory draws on the philosophy of science, the philosophy of mathematics and the philosophy of logic. Although differences exist, there is an obvious relation between the methodological approach of scientific research and auditing. Both define the research questions, collect evidence and draw conclusions. The philosophy of values (ethics) and behavioural sciences (especially psychology) are important in examining the characteristics of the auditor and their influence on the audit process and the audit judgement. The philosophy of ethics is also important for the audit criteria used to assess the subject matter of the audit. Auditing theory draws on the theory of communication to consider communication during the process of audit engagement and the reporting of the audit judgement.

Limperg has formulated a theory of rational expectations (Limperg, 1926) for the basic rationale for the existence of auditing. The audit function exists because users have confidence in the independent and competent judgement of the auditor. The auditor should therefore justify this confidence in the audit function. He/she should fulfil the user's rational needs and not arouse more confidence in the function of the auditor than may be justified based on the audit work performed and the expertise of the auditor. If these conditions are not fulfilled the user will lose confidence in the audit function. This theory is still valid. If the conditions for performing an audit are added, postulates can be described that address both conditions necessary for the need for auditing and conditions for the performance of the audit.

The general theory described enhances a basic philosophy, postulates and concepts. Table 3.2 provides an overview of these stages.

Table 3.2 - Overview of a theory of auditing

	General	Detail
Basic philosophy	<ul style="list-style-type: none"> - Philosophy of logic - Philosophy of metaphysics - Philosophy of knowledge - Philosophy of mathematics - Philosophy of ethics 	Science, psychology, sociology, communications, statistics
Postulates	<p>Theory of rational expectations (Limperg, 1926):</p> <ul style="list-style-type: none"> - Users have confidence in the independent and competent judgement of the auditor. - Justify the users' confidence in the audit function; - Fulfil the users' rational expectations; and - Arouse not more confidence in the function of auditor than may be justified based on the audit work performed and the expertise of the auditor. 	<ul style="list-style-type: none"> - Existence of a relationship of (perceived) responsibility and the related duty of accountability between at least two parties. - Possibility for a (perceived) conflict of interest; - Subject matter of accountability is of too great significance; - Subject matter of accountability is too remote and/or too complex. - A possible benefit is perceived. - The function of auditor exists only because users of audit have confidence in his/her unbiased and professional expert judgement. - The subject matter of audit is susceptible to verification by evidence. - Criteria for the duty of accountability are available or can be developed. - The audit judgement can be communicated in a clear and unambiguous way.
Elements of auditing and related concepts	<p>Audit domain</p> <p>Auditor</p> <p>Audit engagement</p> <p>Audit process</p> <p>Audit report</p>	<p>Defines the scope and the limitations of the professional judgement</p> <p>Competence, independence, objectivity and integrity</p> <p>Identifiable subject matter, agreed upon audit objectives and audit criteria (available or to be developed)</p> <p>Performed in such a way that all the work necessary to substantiate the opinion given in the audit report is performed</p> <p>Formulated in such a way that not more expectations are aroused than can be justified based on the audit work performed and the expertise of the auditor</p>

Auditing consists of different elements. In this chapter the following elements were described:

1. **Audit domain:** auditing is performed from the perspective of a certain domain in the sense of a discipline. The domain from which the audit is performed defines the scope and as such also the limitations of the professional judgement resulting from the audit (Wilschut, 1994 a).
2. **Auditor:** users of audit reports have confidence in the competence and the unbiased professional judgement of the auditor. Audit competence requires both knowledge and skill, which are the products of education, training and experience. Unbiased judgement of the auditor enhances the capacity for independent thought and action, impartiality and objectivity during the process of evidence collection, evaluation and reporting the conclusions of the audit. Professionalism adds to the authority of audit.
3. **Subject matter of the audit:** the subject matter of the audit can be the policy, plans, systems, actions (behaviour), results of these actions (performance) or information about these items, all in relation to different domains. A distinction has to be made between the state of affairs and the reflection of the state of affairs. Information is a reflection of the state of affairs.
4. **Audit objectives:** audit objectives are set in negotiation with the client, but are influenced by laws and regulations. In order to be able to fulfil the user's needs they should be included in the negotiation process. General audit objectives can be divided into sub audit objectives. Also, the level of assurance has to be agreed upon during the audit engagement process.
5. **Audit criteria:** Audit criteria are necessary to assess whether the subject matter complies with the requirements as set by means of the audit objectives. The audit criteria therefore are on the same level as the audit objectives. The audit criteria can vary from authoritative standards to soft reference material. The related yardsticks provide an indication to what extent or how often the criteria set are allowed to be violated.
6. **Audit process:** during the audit process the auditor collects audit evidence and formulates his/her opinion on the subject matter. The auditor has to obtain sufficient evidence to support the audit report issued. Different techniques, methods and tools are available for collecting audit evidence. The approach based on theory and practical experience determines the kind and extent of audit procedures to be performed.
7. **Audit report:** the information given in the audit report reflects not only the opinion of the auditor, but also the account of the task given to him. The audit report has to comply with the general qualitative criteria of information. It has to be clear, contain only relevant information, be comparable with audit reports given on similar audit engagements and not arouse more expectations than those that are justified based on the audit work performed and the expertise of the auditor.

The general theory of auditing provides a basic overview of the basis on which specific theories of auditing can be developed for the different domains where a need for auditing exists. As within organizations, it can be expected that a greater variety and number of audits will be performed in the future and that, as audit engagements become more complex,

auditors from different disciplines will have to work together. To work together in an effective way and to ensure that the confidence in auditors in general is justified, it is important that the theories of auditing applied within the different domains are based on the same concepts and principles. In this chapter, based on the available work of various philosophers on auditing, such a framework was described. In chapter 8, based on this framework, theoretical considerations for the audit of environmental reports will be discussed. In the next chapters evidence is obtained from practice to further specify this framework for auditing.

Chapter 4 The audit of environmental reports: Evidence from practice

4.1 Introduction

This chapter provides an insight into the state-of-the-art of auditing environmental reports. At the start of the research for this thesis the audit of environmental reports was a new kind of assurance engagement in which accountants could be involved. Auditing environmental reports is still a voluntary engagement, although regulations such as the EC regulation "Eco-management and audit scheme" (EU, 2001, 1993) and the Dutch amendment of the environmental control law with mandatory reporting for the companies producing the greatest pollution may stimulate such engagements (Eerste Kamer, 1997).

Since the first audits of environmental reports in 1989, this kind of engagement has shown a slow increase. After the acceptance of EMAS, it was expected that many companies would follow this scheme and thus would have their environmental site report audited. Participation however is disappointing, with mainly German and Austrian companies showing an interest. The voluntary audit of environmental reports, besides EMAS, relates to both corporate and site environmental reports. An international survey (KPMG, 1999a, 1997a, 1993a) indicates a slow increase in audits of environmental reports. Of the 1196 companies included in the 1999 survey (which covers the reporting period 1997), 296 (25%) published an environmental report of which 50 (17%) were audited. In the previous 1997 survey (which covers the reporting period 1993-1995), 903 companies were included of which 220 published an environmental report (24%), of which 32 (15%) were audited. The 1993 survey states that only a few companies, including BP and Det Danske Stålvalseværk A/S, had their environmental reports audited. These results however may be in some way distorted by a slightly different way of selecting the data. In contrast to 1997, in 1999 the Fortune 250 largest companies worldwide were included of which were 85 companies from the USA. However, in the USA only a few audits of environmental reports take place. The majority are performed in Europe.

A survey performed in the Netherlands shows that of the 108 environmental reports included in 1996 (of which 83 were separate reports), 18% were audited (KPMG, 1998b). Of these reports, six reports were audited for an EMAS certificate (See table 4.1). Of the remaining reports, five were audited by KPMG, two by Ernst & Young and two by Deloitte & Touche. It is obvious that in the Netherlands it is mainly the Big 5 audit firms that are involved in the audits of environmental reports.

Since environmental reports show only a slight increase, a similar trend can be found in the audit of these reports. The slight decrease in audits in 1997 is probably due to a difference in the sample taken. Fewer corporate environmental reports were included in the survey, while the corporate environmental reports are audited more often than site environmental reports.

Table 4.1 - Environmental reporting and audit in the Netherlands 1989-1997

Reporting year	1989	1990	1991	1992	1993	1994	1995	1996	1997
Reporting	2	8	14	19	52	69	105	108*	95**
Audit	-	-	-	-	3	9	19	21	16
- EMAS	-	-	-	-	-	3	11	7	5
- Accountants	-	-	-	-	2	2	2	2	2
- Consultants***	-	-	-	-	1	4	6	12	9

* From which 38 were new compared to the previous research; ** A survey performed amongst 421 companies shows that around 150 environmental reports were published. Only 95 were included in the survey; *** Most of these consultants are employed by an audit firm

Source: KPMG, 1993b, 1995b, 1996, 1997b, 1998b, 1999b

Such a slight increase can also be found in the United Kingdom (UK). The UK Environmental Reporting Survey 1997 (KPMG, 1998a) provides us with the following overview for the UK:

Table 4.2 - Status of environmental reporting in the UK

Status of environmental reporting in FT top 100 companies UK				
	1993	1994	1996	1997
Reporting in the annual report	66	65	77	78
Reporting in a separate report	20	34	27	30
Quantifiable targets	-	12	11	14
External verification	3	6	13	10

Source: KPMG, 1998a, 1995a

Published research until 1995 however only states that environmental reports were audited, but provides no insight into the audit itself. This chapter discusses the results of a pilot study in the state-of-the-art of auditing environmental reports. The pilot study focused on environmental reports including an audit report published in Europe until 1995. The results provide an insight into the research object of this thesis.

4.2 Research method

European environmental reports were collected that contained an audit report. The reports were collected until November 1995. The 1994 UK survey of environmental reports (KPMG 1995a) amongst the FT 100 companies found 6 environmental reports that were audited. The Dutch 1994 survey (1996) identified a total of 9 audits, including EMAS. Requests were sent by mail to the professional member bodies of FEE. In addition, the members of FEE Environmental Task Force²¹ were personally requested to assist in the collection of such environmental reports. A distinction is made between EMAS environmental statements

²¹ Currently named The Sustainability Working Party

(=reports) and other environmental reports that are audited. An analysis of these reports is included in paragraph 4.3.2. Of the companies that did not participate in EMAS by November 1995, 29 different companies submitted a total of 43 environmental reports that contained a total of 45 audit reports. The reporting years 1990 to 1994 were analysed. The difference between the number of audit reports and the number of environmental reports can be illustrated by the 1993 environmental report of Dow Europe which contains the audit reports of two different environmental consulting firms, and the 1994/95 environmental report of Nuclear Electric which contains the audit reports of both an environmental consulting firm and an audit firm. In contrast to most other countries, the reporting period of environmental reports in the United Kingdom may not be the calendar year.

The analysis of the audit reports was performed using the content analysis approach. Rather than identifying the frequency of certain terms, this analysis focused on the topics described in the previous paragraph. The topics were identified in the audit reports. Next, the description of the topic was written on a form. A distinction is made between accountants, environmental consultants associated with an audit firm and other environmental consultants.

The analysis covers the following questions:

1. Who signed the audit report?
2. What was the subject matter of the engagement?
3. What was the objective of the engagement?
4. What was the level of assurance provided?
5. What criteria were used to assess whether the objectives were met?
6. What kinds of audit procedures were performed?
7. What was the structure of the audit reports?
8. What was the wording in the opinion paragraph in the audit report?

Limitations of the research

Although a large number of audit reports is included in this analysis, this is no guarantee that the number of these statements is complete. The audit reports were received from FEE-members that are all accountants, which might be a source of bias in itself.

However, comparison with existing research (KPMG 1995a, 1996; UNEP, 1994) and research performed after this study (KPMG, 1997b, 1997a; UNEP, 1997) confirm that this was a highly representative sample of existing audit reports.

Since only a few environmental reports have been audited, the trends that were detected can change easily. The audit reports were classified using the aforesaid questions raised in advance. Only one person adopted the classification in the tables and therefore some subjectivity may be involved. Because of the small proportion of published environmental reports with an audit report no statistical analyses were performed.

4.3 Research results²²

This paragraph discusses the research results. The audit reports found in corporate environmental reports (paragraph 4.3.2) are reviewed separately from those included in EMAS environmental statements (paragraph 4.3.3).

4.3.1 General research results

Replies were received from the following European countries.

- Austria
- Belgium
- Denmark
- Finland
- France
- Germany
- Italy
- Netherlands
- Norway
- Sweden
- Switzerland
- United Kingdom

Austria and Germany

Many companies in Austria and Germany have compiled eco-balances (Öko-Bilanz) in order to assess their significant environmental effects and some have set quantified targets for the improvement of environmental performance. The data requirements for the public environmental statement can be directly read from the eco-balances account. There is no uniform methodology although the Austrian Institut für Ökologische Wirtschaftsforschung (IÖW) has provided a general framework for eco-balances. Companies, however, put this into practice in slightly different ways. The eco-balances are not subject to obligatory audits. At present, audit firms do not perform such audits. Scientists with a background in business administration and some technical knowledge advise the companies in implementing environmental reports.

In working towards compliance with EMAS some companies already included a final word of the consultant, involved in implementing an eco-balance or in designing the environmental report.

By 31 October 1995, nine sites had their environmental statement validated in accordance with EMAS. Six of these EMAS environmental statements were received. If these environmental statements contained audit reports the wordings of these audit reports are analysed in table 4.13.

²² Although environmental experts who audited environmental reports may have different expertise, the overall term "environmental consultants" is used in this thesis. It also includes environmental certification bodies such as Det Norske Veritas. Those related to audit firms such as KPMG Certification are mentioned separately.

Iceland, Ireland, Italy, Finland, Greece, Luxembourg, Norway, Portugal, Spain, Sweden

In Italy, no environmental reports had been audited by 31 October 1995. Norsk Hydro, a Norwegian company, did not yet have an audited environmental report in Norway, but its subsidiary in the United Kingdom did have an environmental report that was audited. In Sweden by 31 October 1995 one site had its environmental statement validated in accordance with EMAS. It is included in table 3.13. By 31 October 1995 no other kinds of audits of environmental reports had been performed in Sweden, but KPMG received several engagements to audit environmental reports in 1996. Depending on the client, the audit reports on the environmental reports will be signed by environmental consultants or both by environmental consultants and accountants.

No information was received from Iceland, Ireland, Finland, Greece, Luxembourg, Portugal and Spain.

Belgium, Denmark, France, Switzerland, Netherlands, United Kingdom

In these countries audit reports on environmental reports were issued and the results are shown in the analysis discussed in paragraph 4.3.2. By 31 October 1995 five sites in the United Kingdom and two sites in Denmark had complied with the EMAS-Regulation and registered as members. Where these environmental reports contained an audit report the wording of these reports is analysed in table 4.13.

4.3.2 Corporate environmental reports

This paragraph discusses the research results from non-EMAS environmental reports. In general these are corporate environmental reports. A total of 45 audit reports in 43 environmental reports of 29 different companies was analysed. The difference between the number of audit reports and the number of environmental reports can be explained by the environmental report 1993 of Dow Europe which contains the audit reports of two different environmental consulting firms and the environmental report 1994/95 of Nuclear Electric which contains the audit reports of both an environmental consulting firm and an audit firm.

1. Who signed the audit report?

Environmental consultants issued 28 audit reports on environmental reports of 21 different companies. Environmental consultants from audit firms issued 4 audit reports on environmental reports of 3 different companies. Accountants issued 13 audit reports on environmental reports of 9²³ companies. In one environmental report, both an environmental consultant and a accountant issued audit reports.

²³ The difference between the number of companies in the sample (29) and the total number audited by environmental consultants (21), environmental consultants related to audit firms (3) and accountants (9) can be explained by two environmental reports that contain two audit reports and two companies that changed to a different kind of auditor.

Table 4.3 shows the companies and their auditors.

Table 4.3 - Companies and their auditors

Countries	Company	Auditor
Belgium	Solvay 1993/94	Arthur D. Little
Denmark	Danish Steel Works 1992, 1993, 1994	KPMG
	Novo Nordisk 1993, 1994	SustainAbility
Finland	Kemira Group 1994	KPMG
France	Rhône-Poulenc 1993, 1994	Coopers & Lybrand
Netherlands	Dow Europe 1993, 1994	Arthur D. Little
	Dow Europe 1993	KPMG environmental consulting
	DSM 1993, 1994	Deloitte & Touche
	Rockwool 1994	Moret, Ernst & Young Milieu
	Stadskwekerij 1993	VB-Accountants
	Stortplaats de Sluiner(SDS) 1993	Moret, Ernst & Young Milieu
Switzerland	Ciba 1993, 1994	Arthur D. Little
	Sandoz International 1994	Arthur D. Little
United Kingdom	Anglian Water 1994	PA Consulting Group
	Body Shop International 1991/92	Arthur D. Little
	Body Shop International 1992/93, 1993/94	Environmental Resources Management
	British Airways 1994	Arthur D. Little
	British Nuclear Fuel 1992, 1993	GIBB Environmental
	British Nuclear Fuel 1994	Ove, Arup & Partners
	British Petroleum Company 1993	Ernst & Young
	British Telecommunication 1994	Touche, Ross & Co., Management and Environmental Consultants
	Coats Viyella 1993, 1994	Touche Ross & Co, Environmental Consultants
	National Power 1992, 1994	Lloyd's Register
	Neste 1994	SustainAbility
	Norsk Hydro 1990	Lloyd's Register
	Northumbrian Water Group 1993/94	Aspinwall & Company
	Nuclear Electric 1994/95	Arthur D. Little and Binder Hamlyn
	Severn Trent 1994, 1995	Environmental Resources Management
	Thorn EMI 1994	Aspinwall & Company
	Tioxide Group 1994	Det Norske Veritas
	Welsh Water Group 1994	Acer Environmental
	Yorkshire electricity 1994	Environmental Resources Management

The leading country is the United Kingdom. Of notable interest was the relative large number of utility companies (water, electricity, nuclear power) in the United Kingdom.

Some independent professionals, amongst others Arthur D. Little and Deloitte & Touche, seemed to operate internationally.

None of the audit reports mentioned that the report was the result of audit work performed by a team of different professionals. A possible exception may be found in the environmental report of Kemira in which the lead auditor from KPMG authorised public accountants stated that they were asked to review the environmental report together with KPMG environmental advisers. The distinction between an environmental department and professional accountants is not always clear. For instance, in the environmental report of Rhône-Poulenc the audit report is signed by Coopers & Lybrand, but there is statement at the top of the audit report explaining that Rhône-Poulenc asked the environmental department of Coopers & Lybrand to check the reliability of the environmental indices. In the Netherlands, while an environmental accountant performed the audit, Moret, Ernst & Young Environment BV signed the audit report²⁴. Obviously a separate company with limited liability was founded for engagements in the environmental field. Although in some engagements accountants and environmental consultants worked together, one professional appeared as the lead auditor. Some audit reports were signed by more than one person, but they were from the same profession. A notable feature were the two audit reports found in the environmental report of Nuclear Electric. Environmental consultants from Arthur D. Little gave their independent opinion on the environmental data and descriptions of progress made. In addition Binder Hamlyn gave their independent opinion on the financial provisions for decommissioning, and spent fuel and waste management and the associated costs, on the information on environmental research and sponsorship and on the estimated information on external environmental costs.

From this table it was obvious that there seemed to be a difference between countries in terms of the kind of expertise of the auditors.

Therefore this table has been redesigned to reveal this trend.

In table 4.4 the number of audit reports in each country is shown. Some companies already have three environmental reports that have been audited. In 1991 Norsk Hydro UK seemed to be the pioneer in having its 990 environmental report audited, which was followed in 1993 by Danish Steel Works, the Body Shop International and National Power, who issued engagements to audit their 1992 reports.

In the United Kingdom there is obviously a trend to have the environmental reports audited by environmental consultants. In the Netherlands, however, the environmental reports of five different companies were audited, with environmental accountants²⁵ performing the audit of

²⁴ These audit reports were classified as audit reports signed by accountants.

²⁵ An environmental accountant is an accountant who has followed the post graduate course in environmental accountancy, a course in the Netherlands in which all kinds of environmental issues in relation to the accountancy domain are discussed.

the environmental reports of four companies. In the other countries the number of audit reports was too small to detect any trend.

Table 4.4 - Countries, the type of auditors and the number of environmental reports audited

Countries	Accountants	Environmental consultants associated with audit firms	Environmental consultants	Total
Belgium	-	-	1	1
Denmark	3	-	2	5
Finland	1 *	-	-	1
France	2	-	-	2
Netherlands	5	1	2	8
Switzerland	-	-	3	3
United Kingdom	2**	3	20**	25
Total	13	4	28	45

* In the audit report the auditors stated that the auditee asked KPMG together with KPMG Environmental advisors (UK) to form an opinion. Apparently the auditors of KPMG authorised public accountants were the lead auditors;

** The environmental report 1994/95 of Nuclear Electric contains two audit reports, one from an environmental consultant firm, relating to the environmental data and information on the progress made and one from an audit firm, relating to the 'environmental accounting' section.

2. What was the subject matter of the engagement?

Since companies are developing environmental information systems, it was expected that the main focus of the engagement would be on the evaluation of this information system and the related internal controls. An adequate environmental information system after all should be the basis of environmental reporting. Although in most engagements attention was paid to the way environmental data was collated, in only seven engagements was the focus explicitly on evaluating the environmental information system. Table 4.5 provides an overview of the subject matters of the engagement.

The scope of the engagements of the environmental reports of the Tioxide Group, Rockwool and National Power 1992 was not mentioned separately, but could be derived from the conclusions paragraph of the audit report.

The scope of most engagements included both the quantitative and qualitative data in the environmental report. Not all audit reports indicate which pages of the report were subject to the audit. Environmental consultants as such only once made a reference to specific pages. When no reference to specific pages is made, users of environmental reports may conclude that all the information included in the environmental report has been audited.

Table 4.5 - The subject matter of the engagement

Subject matter of the engagement	Accountants	Environmental consultants associated with audit firms	Environmental Consultants	Total
Quantitative data in the ER	4	-	1	5
Both quantitative and qualitative data	9	3	21	33
Restricted to certain pages of the ER	9	3	1	13
Environmental performance reporting system	-	2	5	7
(part of the) environmental management system	1	1	6	8
Assistance in the data collection process	-	-	1	1
Total	14	6	34	54 ²⁶

Some engagements (nine) were not restricted to a single subject matter. In eight of them, the scope of the audit was both the environmental report and the environmental management or the environmental information system and once both the environmental management system (environmental policy and management) and the environmental information system.

3. What was the objective of the engagement?

Accountants and environmental consultants do not often explicitly express the objective of their engagements. They do mention the subject matter, but apparently they assume that the objective of the engagement is clear to the readers. In some engagements more than one objective was given.

Since there is, as yet, no formal guidance on how environmental data should be reported and how such data should be described and commented on in order to enable users to interpret them properly, it should be very difficult for an auditor how to evaluate the objective 'fair view'. Nevertheless, the objective of the audit was explicitly a 'true and fair view' on three occasions. Since the audit objective is not expressed in 30 audit reports and related to the final conclusions paragraphs included within the audit reports, it is very likely that 'true and fair view' was more often the audit objective. In the final conclusions paragraphs that were given,

²⁶ This number (54) exceeds the number of audit reports (45) because certain engagements included more than one subject matter. Especially, environmental consultants audited not only the information in the environmental report but also explicitly the environmental management system or performance reporting system.

the word 'fair' was used 17 times in 15 different opinions (2 by accountants and 13 by environmental consultants). Reference was made to the data itself on 9 occasions, reference to the written statements on 6 occasions and to the environmental performance in general on 4. Table 4.6 provides an overview of the objectives of the engagement.

Table 4.6 - Objectives of the engagement

Objectives of the engagement	Accountants	Environmental consultants associated to audit firms	Environmental Consultants	Total
True and fair view	2		1	3
Reliability	1			1
Objectivity			1	1
Substantiated by appropriate evidence			3	3
Valid interpretation			3	3
Compliance EMAS			4	4
Legislation compliance			1	1
Compliance of procedures EMS	1			1
Improve the efficiency and quality of ER	1			1
Mentioning the objective was verify and validate			2	2
Not mentioned	10	4	16	30
Total objectives ²⁷	15	4	31	50
<i>Total audit reports</i>	13	4	28	45

4. What was the level of assurance provided?

In auditing financial statements, different levels of assurance provided are distinguished by using different terms: 'audit' (high level of assurance) and 'review' (moderate level of assurance). It may be questioned whether a similar distinction can be found in auditing environmental reports.

The audit report of Arthur D. Little on the environmental report of Nuclear Electric shows the distinction between environmental audits and reviews and mirrors the financial statements distinction:

²⁷ This number differs from the total number of audit reports, because if mentioned at all, in some cases more than one objective was mentioned.

"Our review involved interviews with key staff at the Company's head office and the examination of data gathering process at two power stations: Sizewell A and Heysham 1. We did not carry out a detailed audit of the whole report".

In the various other audit reports, distinctions were identified between audit/verification and review, but the term 'review' is used differently by environmental consultants not associated with audit firms and by accountants. In the opinions regarding review engagements, they use terms that are often used by accountants in their opinions relating to positive assurance on information in financial statements. For instance the audit report of Arthur D. Little in the environmental report of Nuclear Electric relates to a review engagement, but the wording 'fair and reasonable picture' is used in the conclusions paragraph. In the description of the work performed, it is not clear whether the environmental consultants intended to give the same level of assurance as accountants give in an audit of financial statements.

Some accountants seem to avoid the expressions 'audit' and 'review' and use 'examination', 'attestation' and 'verification', probably to emphasise the difference between the audit of environmental and financial reports.

Nothing is mentioned in the audit reports reviewed about the level of assurance provided. Only in the audit report of Aspinwall & Company on the environmental report of Northumbrian Water it is stated that:

"The exercise was planned and performed to obtain all the information and explanation which we consider necessary to give reasonable assurance that the key data and statements are accurate".

Apparently, in all other audit reports the level of assurance that is provided is not communicated by terms such as audit, review or verification, but by means of an explanation of the work performed and/or the work not performed. In particular, environmental consultants provide the reader with "extensive" information on how the work was performed.

5. What criteria were used to assess whether the objectives were met?

The criteria used to assess whether the objectives are met are mentioned in only a few audit reports. The criteria used vary not only amongst the companies whose environmental report was audited, but also over time. Table 4.7 provides an overview of the criteria that were used in the audit engagement.

Table 4.7 - Rules/criteria used to assess whether the objectives are met

Rules/criteria used to assess whether the objectives are met	Accountants	Environmental consultants associated with audit firms	Environmental consultants	Total
EMAS	-	-	4	4
CEFIC-guidelines on environmental reporting for the European chemical industry	1	-	2	3
Standards within the company, industry and society	3	-	-	3
BS 7750	-	-	2	2
50-point checklist UNEP Technical Report No.24	-	-	2	2
Emerging best practice in corporate environmental reporting	-	-	2	2
The companies' own policies	-	-	2	2
ICC	-	-	1	1
ISO 9000 and ISO 10011	-	-	1	1
Environmental reporting methodologies used within industry	-	-	1	1
Existing legislation	-	-	1	1
The company's report last year	-	-	1	1
Key targets, prosecutions and conservation	-	-	1	1
Lloyd's Registers Environmental Assurance Scheme	-	-	1	1
Not mentioned	9	4	12	25
Total audit reports	13	4	28	45

The PA Consulting group which audited the environmental report of Anglian Water states that there

“are no standards for corporate environmental reports or verification statements; the nearest is the Eco-management and Audit Scheme that defines these at site level”.

Although not audited for EMAS, the audit report of Arthur D. Little and Environmental Resources Management in the environmental reports of The Body Shop and the audit report of Arthur D. Little in the environmental report of Dow Europe 1994 refer to the use of the requirements of the Eco-Management and Audit Scheme as audit criteria. The audit reports in the environmental reports of British Nuclear Fuels and Neste state the intention to comply

with BS 7750 in the near future. BS 7750, however, is a standard for environmental management systems. The most comprehensive reference to criteria used was found in the audit report of SustainAbility which refers to the ‘verification benchmarks’ in its audit report : Neste’s own policies, the 50-point checklist described by UNEP Technical Report No.24 and emerging best practice in corporate environmental reporting.

6. What kinds of audit procedures were performed?

The description of the work undertaken provides some insight into the different kinds of audit procedures that are performed. However, these audit procedures are not always described, nor are they described in a similar way. Table 4.8 shows the way in which the procedures were described. Because of different audit objectives and audit criteria that are used in engagements a difference in audit procedures performed may occur. In auditing financial statements, standards exist for the auditing procedures that need to be performed to provide reasonable assurance. These standards do not yet exist for auditing environmental reports.

Table 4.8 - Description of the work undertaken

Work undertaken	Accountants	Environmental consultants associated with audit firms	Environmental consultants	Total
'Extensive' description of the work performed (why/how)	6	4	16*	26
Description of both the work undertaken and the scope limitations to the work performed	2	-	8	10
Description of only the scope limitations to the work performed	2	-	1	3
Nothing at all	3	-	2	5
Other	-	-	1**	1
Total audit reports	13	4	28	45

* Three times reference was made to certain guidelines/requirements for an audit methodology;

** Aspinwall & Company assisted in the data collection for the environmental report

Environmental consultants especially provide the reader with 'extensive' information on how the audit work was undertaken.

From the scope limitations of the work performed it appears that detailed verification of data collected at site level was often beyond the scope of the engagement. For instance:

“Validation of individual data at the sites and detailed verification of the aggregate corporate figures were beyond the scope of this review” (Ciba 1994).

Often only a limited number of sites (varying from two to six) were included in the audit.

The audit report of Arthur D. Little (Body Shop and Nuclear Electric) states that they did not conduct a comprehensive environmental audit/detailed audit of the whole report. A similar wording, but in relation to operations, can be found in the audit report of Ove, Arup & partners in British Nuclear Fuel: “*did not involve a full environmental audit of BNFL’s operations*”.

The research results show that review of documentation, site visits and interviews seem the most frequently used techniques to collect evidence. The interviews are mainly held at corporate level with staff responsible for data collation and monitoring. For comparison with underlying information, sometimes only a comparison is made with the data as received by the sites (for instance Kemira). Whether this information is reliable or not is not audited. For a critical review of documents and data, documents such as the environmental policy statement, environmental management systems manuals and procedures for consolidation and monitoring are assessed.

It is striking, perhaps, that a comparison with the requirements of EMAS obviously involves less effort than a normal verification, because Arthur D. Little mentions in its audit report in the environmental report of Dow Europe 1994 that “*therefore this review did not include a detailed verification of management systems or procedures, nor of the environmental performance data itself*”.

Three times a reference to certain guidelines or requirements for the audit method was made. Acer Environmental has audited the environmental report of Welsh Water and states that all verification procedures were conducted by registered Acer staff in accordance with the Code of Practice for Registered Environmental Auditors, produced by the Environmental Auditors Registration Association. Environmental Resources Management (The Body Shop 1993/94) refers to the requirements specified by EMAS for the audit method. Lloyd’s Register (National Power) stated that the audit method was in accordance with ISO 9000, BS 7750 and ISO 10011 strategies.

Table 4.9 provides some insight into the variety of audit procedures that were performed, as described in the audit report.

Table 4.9 - Description of audit procedures performed

Audit procedures performed	Accountants	Environmental consultants associated with an audit firm	Environmental consultants	Total
Observation:				
- Site visit/inspection	1	3	11	15
Documentation:				
- Comparison with client's documents and records	6	-	7	13
- Examination of documents and data	3	3	14	20
- Comparison with assurance reports	1	-	-	1
- Amendments on drafts	-	-	1	1
- Audit trail	-	-	2	2
- Analysis of internal audit findings	1	1	1	3
Inquiries of client:				
- Interviews at corporate level	3	2	11	16
- Interviews at sites	-	2	6	8
- Not mentioned	-	-	1	1
Analytical procedures:				
- Comparison over time	-	-	1	1
Reperformance:				
- Recount and recalculation	1	-	1	2
- Test	2	-	-	2
- Check	-	-	3	3
Confirmation	-	-	-	-
Physical examination	-	-	-	-
Other:				
- Comparison with data from external sources	-	1	2	3
- Examination of existence of procedures and operation of procedures without mentioning the technique used	3	1	6	10
Not mentioned	5	-	4	9
Total audit reports	13	4	28	45

7. What was the structure of the audit reports?

The purpose of this question is to find out if the development of any similar structure could be detected despite the fact that the audit reports found were different for every company. Since accountants are familiar with reporting in a certain way the hypothesis was that there would be a difference in the way accountants and environmental consultants report. Consultants associated with audit firms, such as KPMG Environmental Consulting, were separated from environmental consultants, because in an informal way they can communicate with accountants in their firms and this was expected to affect the way in which the audit report was formulated. Environmental consultants are familiar with reporting on the strengths and weaknesses of the environmental management system. The different backgrounds of both types of professionals did influence the way in which the result of the audit was reported. Table 4.10 provides an overview of the contents of the audit report.

Table 4.10 - Structure of the audit report

Contents of the audit report	Accountants	Environmental consultants associated with audit firms	Environmental Consultants	Total
Title	13	4	28	45
Addressee	1	-	-	1
Subject matter of the audit	12	4	26	42
Audit objectives	3	-	12	15
Responsibility of the company's management	1	3	-	4
Audit criteria	4	-	16	20
Description of the work undertaken	8	4	24	36
Conclusions paragraph	13	4	28	45
Good practice and improvements made	1	1	13	15
Recommendations	2	-	17	19
Signature/name auditor/firm	13	4	27	44
Auditor's address	9	2	6	17
Date of the audit report	11	3	9	23
Total audit reports	13	4	28	45

The structure of 37 of the 45 analysed audit reports consists of:

- title;
- subject matter of the audit;
- description of the work undertaken;
- opinion; and
- signature/name auditor/firm.

The length of most audit reports studied was usually one complete page (A-4).

Accountants, in contrast to environmental consultants, did not in most cases explain their judgement by referring to the good practices and points of improvement nor did they mention, or mention only briefly, the work undertaken and the recommendations. It is clear from table 4.10 that accountants referred to the good practices of the companies and the improvements they achieved only once in their audit reports, while environmental consultants not associated with audit firms mentioned this in 13 of their audit reports. Recommendations were mentioned only twice in the audit reports given by accountants against 17 of audit reports given by environmental consultants not associated with audit firms. For instance, in the audit report of SustainAbility on the environmental report of Neste, the good practices and the recommendations make up half of the audit report. It may be that accountants are following their normal pattern by issuing a management letter that contains recommendations. Such supplementary reporting is not covered in the present research. Although accountants gave a description of the work undertaken in eight of their audit reports, this description was often very brief (one sentence). Environmental consultants not associated with audit firms gave a description of the work performed in 24 of their audit reports. These descriptions were also more detailed, describing, for instance, whom they had interviewed, and the kind of verification procedures used for quantitative environmental data in the environmental report. It is interesting to see that the numbers for the environmental consultants associated with audit firms figure somewhere between those for accountants and those for environmental consultants.

None of the audit reports reviewed used an adapted version of the prescribed wording of ISA for audit reports on financial statements.

The issue of management's responsibility was only addressed four times, all involving UK accounting firms: three times by Touche & Ross environmental consultants and once by Binder Hamlyn accountants, in an audit report in which they gave their opinion on typical accounting issues.

There was no mention of the responsibilities of the auditors in any of the audit reports under consideration. Most of the time, it was stated that "*experts were asked to ...*".

Audit reports in environmental reports of the same company over the years seem to display only slight modifications. These were mostly due to the extension of the engagement. Even when companies changed auditors the audit reports looked alike.

8. What was the wording of the opinion included in the audit report?

Table 4.11 and Annex 4.1 provide an overview of the opinions in audit reports. The opinions found were all different. Opinions from auditors that had audited different companies were also different for each company audited. The final opinions of accountants and environmental consultants associated with an audit firm however may be said to be much more carefully stated than the opinions of environmental consultants.

Table 4.11 - Opinions included in the audit report

Form of statement used in the opinions	Accountants	Environmental consultants associated with audit firms	Environmental consultants	Total
True and fair	2	-	7	9
True	-	-	2	2
True with qualifications	-	-	1	1
Fair and honest	-	-	3	3
Fair and accurate/open/balanced/reasonable	-	1	3	4
Fair	-	-	3	3
Accurate (e.g. valid and accurate)	-	-	13	13
Reasonable, reliable or valid (e.g. consistent and reasonable valid representation)	-	-	3	3
Properly collated (e.g. compiled with due care)	8	2	2	12
Negative assurance (e.g. free of material error, nothing comes to our notice which...)	2	1	1	4
Consistent with EMAS Regulation	-	-	3	3
Consistent with other requirements	3	-	3	6
The design of the environmental report is appropriate	1	-	1	2
Procedures have been performed satisfactorily	1	-	-	1
The environmental information system is appropriate	-	-	8	8
Total audit reports	13	4	28	45

The number of opinions found exceeds the number of audit reports because environmental consultants in particular issued separate opinions on different subject matters. Table 4.12 shows the subject matters on which a 'true and fair' view or similar wordings are used.

The opinions within the audit reports range from opinions that give too much comfort to opinions that are very carefully worded. Sometimes it was very difficult to locate the final opinion, because opinions were given in different sections of the audit reports.

Table 4.12 - Subject matters in the opinions of 17 different audit reports

	Performance data	Written statements	Performance data and written statements*	Targets	Total
True and fair	6	3*	-	-	9
True	-	1*	-	1	2
True with qualifications	1	-	-	-	1
Fair and honest		2*+1**		-	3
Fair and accurate/balanced/open/reasonable	3	-	1	-	4
Fair	-	-	3	-	3
Total	10	7	4	1	22

* environmental policy, programmes and procedures;

** written statements on data and performance

Opinions from which the reader might expect too much comfort can for instance be found in the environmental reports of National Power, Norsk Hydro and Welsh Water. Lloyd's Register audited the first two of these environmental reports. They use the words 'true and fair view' in their audit report, while their recommendations show that a lot of work still needs to be done on quality of the environmental management system. In a later audit report the words are changed to 'true and fair picture', but the meaning of this expression remains the same. The opinion of Acer Environmental in the environmental report of Welsh Water shows is similar to the opinion of Lloyd's Register. In the opinions of Moret, Ernst & Young Milieu in the environmental report of SDS and Rockwool the Dutch word 'getrouw' is also used, which is similar to 'true and fair'. A difference with the previous opinions is that the data of SDS that should give a true and fair view relate to solid waste that leads to revenues for this company that disposes solid waste.

Using the word 'fair' implies that the auditor is aware of the needs of the users of environmental reports, because by using the word 'fair' he/she states that there is full disclosure of all material matters relevant to the proper presentation of the environmental information and that it is presented adequately. It is questionable whether the word 'fair' can already be justified in this preliminary stage of auditing environmental reports.

Touche Ross & Co. in their opinion on the environmental report of British Telecommunication use the words 'a fair and balanced disclosure' but they make the opinion less powerful by using the sentence that "*British Telecommunication has made reasonable endeavours to give a fair and balanced disclosure of all available information relevant to those topics where material*".

The opinion given by Arthur D. Little concerning the data in the environmental report of Sandoz is a qualified opinion. They use the words 'true picture', but make qualifications for the audit work that could not be done. They make a distinction between reliable data and

reasonably reliable data. The final opinion of ERM in the environmental report of the Body Shop clearly shows that they audited in accordance with EMAS.

Very carefully stated opinions can be found in the environmental reports of DSM, Danish Steel Works and Dow Europe (audited by KPMG environmental consulting).

4.3.3 EMAS environmental reports

Up to 31 October 1995 environmental reports of 14 sites in Europe were validated to comply with EMAS.

Table 4.13 - Companies/Sites that before 31 October 1995 complied with EMAS

Company/Site	Country	Name of verifier	Logo of EMAS participation	Audit report of verifier
Akzo Nobel Chemical, Gillingham	UK	Bureau Veritas Quality International	Yes	Yes
Ciba Clayton, Manchester	UK	British Standards Institution	Yes	No
Design to Distribution	UK	Statement not received		
National Power, Selby	UK	Statement not received		
NOR Systems, Harwich	UK	R.J. Newell, Bureau Veritas Quality International	No	no**
Stora Kabel, Hagen	Germany	Dr. A.M. Warris, Lloyd's Register Quality Assurance	Yes	Yes
Hoechst Trevira, Bad Hersfeld	Germany	Dr. A.M. Warris, Lloyd's Register Quality Assurance	no***	Yes
Viessmann, Allendorf, Werke 05	Germany	Dr. Werner Wolfarth	No	No
Viessmann Werke 09	Germany	Statement not received		
Brueninghaus Hydromatik, Werk Horb	Germany	Statement not received		
Canon, Giessen	Germany	Dr. Jur.Fritz H. Mechel	Yes	No
Phoenix-Trykkeriet	Denmark	Verifiers of Det Norske Veritas	Yes	Yes
Salomon & Rousell	Denmark	Verifiers of Det Norske Veritas	Yes	Yes
Stora Fors, Fors	Sweden	SIS Certifiering	No*	No

* However, the logo was included in a special brochure on their participation in EMAS;

** On every page a red stamp with the name of the verifying firm, the name of the verifier, the date of validation, and the wording "environmental statement validated in accordance with Council Regulation (EEC) No. 1836/93 of 29 June 1993";

*** A copy of the letter of the registration of the participation in the EMAS-scheme was included.

Ten environmental reports were received, in five of which an audit report was included, while in two environmental reports a sentence that the environmental report was validated was found and in one environmental report every page was stamped in red to confirm that the environmental statement had been validated. Although including an audit report from the verifier is not mandatory under EMAS, there is obviously a perceived need for including some evidence that the environmental report has been audited. The wording of the audit reports is included in Annex 4.2.

4.4 Conclusions

In general there appears to be a lack in consistency in both the audit engagements and the audit reports. This may be due to the fact that auditing environmental reports is still in an early stage of development. Besides data, the environmental management system and the environmental information system are subject to audit. From the recommendations made it seems that companies have a need for advice on their data collation process, the compilation of the environmental report and their environmental performance. Also, the auditors and environmental consultants do not seem to have a consistent approach in performing the audit and reporting the audit results. My exploratory content analysis of the audit reports included in environmental reports in Europe leads to the following broad conclusions:

1. Who signed the audit report?

In all, 28 (62%) environmental reports were audited by environmental consultants, 4 (9%) by environmental consultants associated with audit firms, and 13 (29%) by accountants. Apparently there is no single domain from which the audit takes place. The audit reports, with one exception, do not show that there has been co-operation between accountants and environmental consultants.

There were certain differences between countries: in the UK, in cases where environmental reports were audited, audit reports were usually issued by environmental consultants; whereas in the Netherlands, the audit reports on environmental reports reviewed were all issued by accountants specialising in environmental matters.

2. What was the subject matter of the engagement?

There was no consistency between companies as to the subject matter of the audit engagement. In addition to the data in the environmental report the subject matter may also include the environmental management system or the related environmental information system. As such both the state of affairs and information on the state of affairs may be subject to audit.

3. What was the objective of the engagement?

The audit objectives seem to differ between engagements. On three occasions a 'true and fair view' was explicitly mentioned as an audit objective. However, only in 15 out of 45 audit reports was the audit objective mentioned. Compared to the audit opinions given, the audit

objective must have been given more often. Further compliance with legislation, EMAS (although no EMAS validation was given) and procedures were also audit objectives.

4. What was the level of assurance provided?

The level of assurance was explicitly mentioned in none of the audit reports. Although in this early stage many (inherent and specific) limitations to auditing exist, a high level of assurance is expressed in the opinions. In 22 (49%) audit reports expressions such as 'true and fair', 'fair' or 'true' were used, with a qualification being added only once. Perhaps the recommendations that are also made in the audit report serve as a kind of qualification, but this is not clear. As a result some of the opinions included in the audit reports, especially those issued by environmental consultants, may result in a higher level of expectation in relation to assurance than intended.

Further, some confusion may arise as to the term 'review'. Environmental consultants seem to use this word in a way different from that used by accountants. They describe the purpose of the review in the audit reports on environmental reports as verification; they perform procedures that may extend the ones required for a review, but that are less than the procedures required for an audit; and they formulate an opinion that, with one exception, was not related to a 'negative assurance'. The accountants may likewise cause some confusion, because if they provided a negative assurance, they did not use the words "did not perform an audit" in their statement.

5. What criteria were used to assess if the audit objectives were met?

In general it seems that a wide variety of audit criteria is used. Due to a lack of generally accepted standards for environmental reporting other criteria such as industry guidelines, recommendations and best practice are used. Also the EMAS regulation is used although for none of the companies this resulted in a participation in the scheme. The existing standards were used for the audit of environmental management systems. Also, criteria inside the company were used such as the company's policies and key targets.

6. What kind of audit procedures was performed?

Most evidence is obtained through a review of documentation, site visits and interviews. There seems to be inconsistency between the different audits. In some audits, the techniques used are aimed only at assessing whether the environmental reports comply with the underlying information. However, techniques such as interviews and document analysis are performed only on the corporate level. Therefore the auditor has no insight into the reliability of the data that the sites provided to the headquarters.

7. What was the structure of the audit reports?

There was no uniformity in that audit reports were different for each company that had a published environmental report. None of the audit reports was set up according to the International Standards on Auditing. The wording of audit reports by accountants and environmental consultants associated with audit firms differed from that in reports issued by environmental consultants. Environmental consultants, especially, gave opinions on a variety

of subject matters, sometimes resulting in a "general" opinion. None of the audit reports were jointly signed by a team of environmental consultants and accountants, nor was reference made to any work performed by other experts.

In general the following differences were identified between professional accountants and environmental consultants:

1. accountants:
 - referred to the audited pages of the environmental report;
 - made no reference to the reason for their opinion; and
 - gave only a brief description (if any) of the audit method used;
2. accountants and environmental consultants associated with audit firms:
 - stated the wording in the conclusion paragraph more carefully than environmental consultants;
3. environmental consultants:
 - rarely identified the pages of the environmental reports that were audited;
 - implied by their conclusions that coverage was comprehensive and gave opinions on a variety of different subject matters;
 - explained their opinion by mentioning the audit methodology, good practices or improvements made by the company and any outstanding recommendations.

In general, the subject matter of the engagements was not well defined in audit reports. In only 13 (29%) audit reports an explicit reference to the pages audited was included. Rather than describing the subject matter of the audit, most audit reports gave a description of the audit procedures. The objectives were mentioned separately in only 15 (33%) of the audit reports. Also, the criteria used to assess whether the objectives were achieved were mentioned in only 20 (44%) of the audit reports. Further, almost no attention was paid to the description of the respective responsibilities of the company's management.

The audit reports may therefore be very confusing for users of these reports.

8. What was the wording of the opinion in the audit report?

The opinions given vary from opinions that, given the state of the art of environmental reporting and environmental information systems, may suggest too much assurance, to opinions that, on careful inspection, add nothing to the credibility of the environmental report. In some audit reports more than one opinion is included, sometimes followed by an overall opinion.

The above exploratory content analysis shows the early stage of auditing environmental reports. The audit of environmental reports is not an institutionalised engagement yet. There is a wide variety of subject matters, audit objectives and levels of assurance provided. Auditors use different kinds of audit criteria and report their opinions in different ways. This inconsistency could result in an expectations gap, which must be a cause for concern amongst

all parties involved: preparers of environmental reports, auditors and users. In the next chapter the expectations gap between companies and auditors is explored in more detail.

Chapter 5 The audit of environmental reports: Differences in interpretation

5.1 Introduction

In the previous chapter we have seen the variety in engagements and audit reports. Only if this leads to an expectations gap will a problem exist, because this may eventually lead to a loss in the confidence in the auditor. Users of audit services provided by these auditors may find other ways to obtain the assurance they need.

Accountants are aware of the expectations gap, because it has already existed for many years in financial auditing. Accountants however, are not the only ones that perform the audit of environmental reports. In fact, as described in the previous chapter, they are in a minority. Professionals that have more 'technical' environmental knowledge perform most audits of environmental reports. Quite often their education is in chemistry or biology coupled with experience in advising companies during the implementation and certification of environmental management systems. In some cases, a multi-disciplinary team performs the audit of environmental reports.

Aside from the requirements of the European Regulation "Eco-Management and Audit Scheme" (EMAS), no other requirements covering auditors in relation to the audit of environmental reports exist. In fact, any professional can audit environmental reports and may perform the audit as he/she thinks fit. In order to add value to the environmental reports, the auditor should fulfil the task in such a way that reasonable user expectations are satisfied. Auditors however, can only guess as to what might amount to reasonable user expectations. As yet, no research in respect of user expectations in relation to the audit of environmental reports has been performed. Given the results set out in the previous chapter, it may be questioned whether companies define the audit engagement clearly. If not, companies hire auditors without knowing exactly what to expect. Following the reasoning of Limperg (1926), eventually a certain standard will be developed concerning the subject matter and objectives of auditing environmental reports. In my opinion, this can only be accomplished by a continuous dialogue between stakeholders, companies and auditors.

5.2 Expectations gap

Limperg (1926) was the first to make the accountancy profession aware of the expectations gap. Although it is recognised in the area of financial audits, one may assume that the expectations gap may be applicable to an area wider than the financial audits.

Various aspects can be distinguished with regard to the expectations gap²⁸. Usually the following two aspects are described (e.g. Humphrey, Moizer & Turley, 1993; Porter 1993; Van Kollenburg, 1991; Olders, 1997):

1. Users of environmental reports expect more in relation to the work performed by the auditor and the results of this audit work than may reasonably be justified (communication gap);
2. The audit work performed is not a solid basis for the opinion provided in the audit report (performance gap). The auditor has performed fewer audit procedures than required by guidelines or than may reasonably be expected of auditors. A performance gap therefore arises due to inadequate performance on the part of the auditor. This may result in legal claims against the auditor.

The communications gap may be further divided into (see also figure 5.1):

- *differences in expectations on the subject matters that were audited:*

It is possible that users of environmental reports expect that, in addition to the information presented in the environmental report, other matters such as the environmental management system and the behaviour of management related to compliance with laws and regulations also have been subjected to audit. When reading an unqualified audit report, users may expect that the environmental management system has been effective, or that the company complies with all environmental laws and regulations. This, however, is mostly beyond the scope of the audit.

- *differences in expectations on the objective of the audit:*

Audit objectives for audit of environmental reports are usually stated by the client, but may be influenced by regulators and users of environmental reports. Usually the objective of an audit of environmental reports is to provide an opinion on whether the information in the report is 'true and fair'. From the overall audit objective 'true and fair', audit objectives such as accuracy, completeness and adequate disclosure can be derived. There is a possibility that auditors and users of environmental reports identify different audit objectives. Besides differences in perceived audit objectives, differences in the perceived level of assurance may also exist. In contrast to engagements to provide assurance on financial statements, no distinction is made between audit and review engagements to distinguish between different levels of assurance. This will not be a problem if both the requested and provided level of assurance on each audit objective is clearly stated in the audit report. This level of transparency however is at present lacking in audit reports and therefore the level of assurance provided is open to different interpretations. If the wording 'true and fair view' is used, does this mean that the same level of assurance is provided on the same audit objectives as in the case of financial statements?

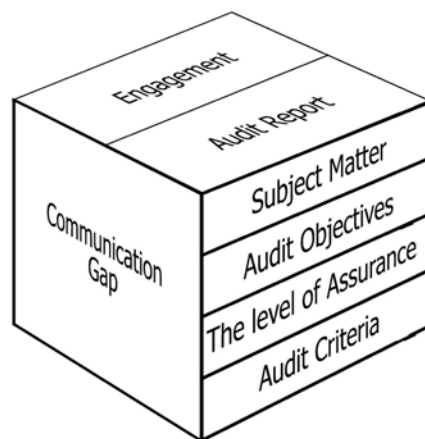
²⁸ An expectations gap is defined as: performance of an audit in a manner which is at variance with the beliefs and desires of others who are party to or interested in the audit (based on Humphrey et al., 1992)

- *differences in audit criteria:*

Audit criteria in the form of standards however are, as yet, not available in auditing environmental reports. Some guidelines²⁹ exist regarding the content of environmental reports, but at the time of research in 1996 none of them addressed the qualitative characteristics of environmental reporting. The interpretation of qualitative characteristics of environmental information presented in the environmental report is important, because the description of the qualitative criteria forms the audit criteria against which the audit objectives are assessed. Reliability of information can have a different meaning for different people.

Figure 5.1

Communication Gap



A distinction can be drawn between the needs and expectations as well as between those of users and of auditees (the responsible party of the subject matter being subject to audit), since they are not necessarily the same (Van Kollenburg 1991). There may be a need, but no expectations. For example if the auditee chooses not to include all its needs in the audit engagement due to, for instance, the costs of services, he/she therefore will not expect these services either. Van Kollenburg (1991) identifies another aspect of the expectations gap, namely the aspirations gap. The auditee and/or user receive(s) more than needed or agreed upon. This may concern procedures performed that are necessary for the sound basis of the audit opinion, but that have no added value for the auditee and/or user or may concern advice that was not requested or needed but still received. Olders (1997) also draws a distinction between expectations and needs. He describes the difference between reasonable expectations

²⁹ Examples include United Nations Environmental Programme (UNEP) 50-point checklist (UNEP, 1994), EMAS (EU, 2001, 1993) and International Chamber of Commerce (ICC, 1991)). FEE published in 1999 a discussion paper on the qualitative characteristics of environmental reporting (FEE, 1999b). Royal NIVRA published in 2000 a checklist for environmental reporting (Koninklijk NIVRA, 2000). Further the sustainability reporting guidelines of Global Reporting Initiative (GRI, 2000) include environmental information.

and actual needs as an opportunities gap. This gap is especially important for the exploration of new services that the accountancy profession can provide. Not all needs can be fulfilled, such as needs for tax evasion. Further there is a difference between actual needs and reasonable needs. This difference is a fictional gap, which the accountancy profession, given its responsibility to society as a whole, can never fulfil (Olders, 1997). In addition there will always be certain services that the accountant can provide, and for which companies or users may have a need, but for which they do not perceive the accountant as the most competent person.

Closing the expectations gap between auditees and auditors should be easier than between users and auditors (Van Kollenburg, 1991). Auditees have a direct relationship with the auditor, which facilitates the communication. Most users are anonymous to the auditor, which makes it hard to discuss their needs. Only representatives of users can be identified, but again this enhances a communication risk. Further, the user group covers so many different stakeholders that even within the user group different expectations may exist. Further, users may have conflicting needs. The question, therefore, arises as to which needs to fulfil. A platform in which users' needs are discussed will provide a significant contribution (Berendsen, 1990).

In contrast to financial reporting the players (companies that publish environmental reports, the users and the auditors) in the field still have a lot to learn from each other. Therefore, in the practice of environmental reporting and auditing, stakeholder dialogue is very important. Stakeholder dialogue may reduce the communications gap. However, unrealistic expectations will always be difficult to meet. Yet there remains another gap, the performance gap. The performance gap is the most threatening one for the audit profession. Using the same wording that is used in the case of an audit report on financial statements, but performing fewer audit procedures confuses users of both environmental and financial reports. Inadequate performance in the field of auditing environmental reports may have negative repercussions in the field of auditing financial statements. Of wider concern is the fact that it may eventually lead to a loss of confidence in auditors generally.

To my knowledge, no other research has yet been published on the expectations gap regarding the audit of environmental reports when starting the research. Research on the expectations gap in relation to the audit of financial statements (e.g. Humphrey, Moizer & Turley, 1992; Porter, 1993), however, suggests that many users misunderstand the auditor's role and responsibilities and that the present audit report only adds to this confusion. Users are unaware of the limitations of the audit function and are confused about the distinction between the responsibilities of management and those of the auditor. The challenges to the quality of an auditor's performance are reflected in the volume of litigation. The causes of the expectations gap include: the auditor's role in relation to fraud detection; the extent of an auditor's responsibility to third parties; the nature of balance sheet evaluation; the strength of and continuing threats to auditor's independence; and, aspects in relation to the conduct of audit work. Based on research performed by the Limperg Instituut (1998), it appears that the

stakeholder groups interpret the unqualified opinion on financial statements too much as “no errors within the financial statements”. Also, one third is of the opinion that an entity is not in danger as a going concern if an unqualified opinion is given. More than 60% of the responding stakeholder groups believe that if an unqualified opinion is given, there is no fraud within the company.

Some elements of the stakeholders’ perspective on audit reports in environmental reports have been addressed by the Investor Responsibility Research Center. On behalf of the Global Environmental Management Initiative (GEMI/IRRC, 1996), they have performed research on the value of audit reports in environmental reports. The following key stakeholder groups were included in the research: environmental groups; institutional investors; regulators; the media; and, corporate environmental staff (on average 7.4 participants per group). The presence of an audit report in an environmental report did not contribute to more positive evaluations of its credibility by various stakeholder groups. Two reports of companies in the same industry were compared (Amoco and BP³⁰). The presence of the audit report in the environmental report of BP did not appear to make an appreciable difference. Although some methodological comments can be made³¹, apparently there are more variables at stake in evaluating the credibility of environmental reports. The element of an environmental report that contributed most to communicating credibility was a balanced tone, defined as coverage of both positive and negative aspects of environmental programmes. The participants were also asked to comment on the importance of specific attestation elements in establishing credibility. The accuracy of the data was the most important element, followed by recommendations for improvement and follow-up of previous recommendations. A balanced tone of the environmental report again scored highly (see figure 5.2).

The items concern all possible items that establish credibility, not only those concerned with the audit report. Some refer to the company’s environmental management. Some refer for instance to the environmental report itself.

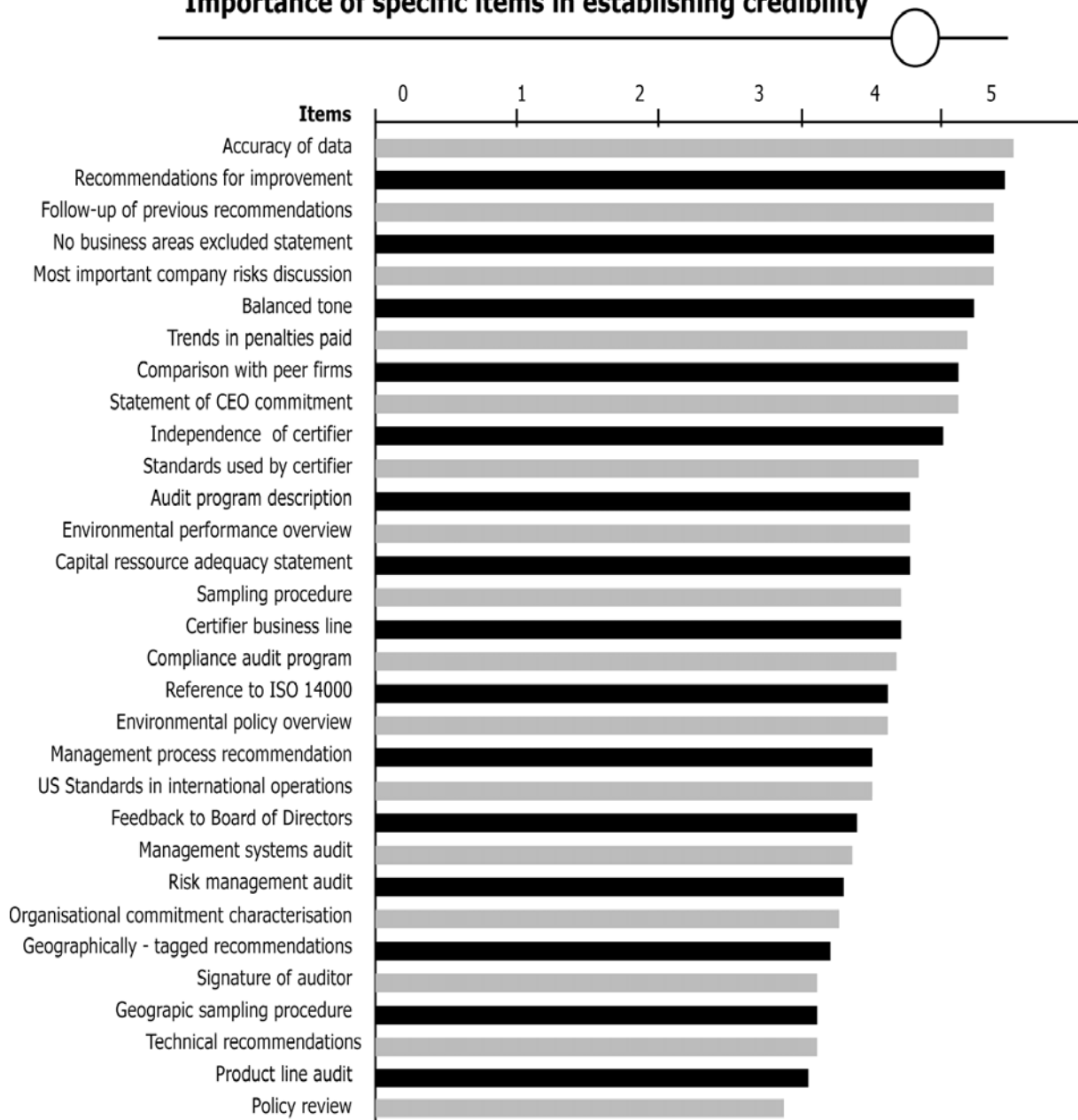
There was no clear consensus on the type of firm, combination of skills, or individuals that would be best qualified to give an informed, yet independent, audit report on a corporate environmental report. Many participants believed that the system for auditing financial information in annual reports by audit firms works reasonably well, as a result of widespread faith in the accounting/audit standards and the ability of potentially aggrieved parties to sue the audit firms for misrepresentation. Participants expressed doubt about the potential for attestation to add value until clear standards for the audit were agreed upon.

³⁰ At this time these companies were not merged yet.

³¹ In my opinion, in order to evaluate the value added by an audit report, a comparison should be made between two similar environmental reports, of which one contains an audit report.

Figure 5.2

Importance of specific items in establishing credibility



Source: Environmental Reporting and Third Party Statements, Investor Responsibility Research Center and Global Environmental Management, Initiative copyright 1996

5.3 Research method

The purpose of this exploratory research is to gain an insight into the existence of a potential expectations gap regarding the audit of environmental reports. Due to the differences in audit engagements the research is limited to differences in expectation in relation to the specific audit engagements and not to differences in expectations in relation to auditing environmental reports in general. Since potential users of environmental reports are numerous it was decided to limit the research to the difference in expectations between the companies that gave the engagement to audit their environmental report and the auditors that audited these environmental reports. The underlying assumption is that if an expectations gap exists between companies and auditors, given that companies are more aware of the contents of the audit engagement and the audit procedures performed, the likelihood of an expectations gap between users of environmental reports and auditors is even greater.

The research method used was a survey in which questionnaires were sent to all European companies that were known to have published an environmental report containing an audit report in the period 1990-1995. The survey was based on all such reports which had been received by March 1996 (see also the research method of the previous chapter). A questionnaire was also sent to those auditors who had performed the audit of the environmental reports received. In the case of the companies, the questionnaires were addressed to the managers responsible for engaging the auditors. In the case of the auditors, the questionnaires were addressed to the managers responsible for the audit. A copy of the audit report was attached to the questionnaires. In total 27 companies and 16 auditors were sent a questionnaire.

In order to prevent confusion, the wording 'audit of environmental reports' was not used in the questionnaires. Environmental consultants often use the word 'audit' for an internal audit of the environmental management system. Instead, such audits were referred to as 'verification of environmental reports'. A list of definitions was also included.

The questionnaire was based on the latest received environmental report of the company and contained a limited number of questions. The questionnaires were discussed in meetings of the FEE Environmental Task Force³². Questions on the audit engagement and the interpretation of the audit reports included ten possible topics on which assurance could be given. To answer these questions, respondents were asked to indicate the perceived level of assurance in each case using a five-point Likert-scale. A pilot questionnaire was sent to two companies and two auditors. No major amendments to the questionnaire were necessary. The managers responsible for the audit reports were sent a copy of the questionnaire, a list of definitions and some information on FEE. A reminder was sent to the companies and auditors three weeks after the original request.

³² Currently named Sustainability Working Party

Nineteen replies were received from companies. One company did not have time to answer the questionnaire. Thus in total, 18 replies from companies were analysed (useful response rate of 67%). From 11 auditors, 13 replies³³ were received, although in one case not all the questions were answered (the useful response rate therefore varies from 44%-48%). Nearly 74% of the British companies included in this research replied, whereas only 31% of companies in other European countries replied. This may, in part, be explained by the fact that the questionnaires were in English. Half of the companies were utility providers (water, electricity, and telecommunication), largely as a result of the British influence, and one third was from the chemical industry.

In ten cases, replies were received from both the company that published the environmental report and the respective auditor (useful response rate 37%, Table 5.1). These corresponding replies form the basis for the further analysis of a potential expectations gap. Seven out of ten corresponding replies came from the United Kingdom. Replies were received from companies in the following industries: chemicals, electricity, water, and oil. Of the corresponding replies received from auditors, seven replies were from environmental consultants and three from public accountants.

Table 5.1 - Analysis of the ten corresponding replies used in the analysis

Industry	Environmental consultant	Accountant	Total number of replies
Chemical	1	3	4
Water	2	-	2
Electricity	3	-	3
Oil	1	-	1
Total number of replies	7	3	10

Limitations of the research

Because the research is related to the research described in the previous chapter similar limitations may apply. In collecting all available audit reports included in European environmental reports at the time, a certain bias might exist, given that such reports were provided through members of the FEE Environmental Task Force, all of whom are accountants. The survey is based on the audit reports received and may therefore be biased towards audit reports from accountants, as well as reflecting a possible bias towards practice in the United Kingdom. However, comparison with existing research (KPMG 1995a, 1996; UNEP, 1994) and research performed after this study (KPMG 1997a, 1997b; UNEP, 1997) confirms that this was a highly representative sample of existing audit reports.

³³ The auditors received a questionnaire for each company they had audited. Therefore the number of replies exceeds the number of auditors.

Since the number of environmental reports containing audit reports is still widely considered to be low, the findings of this survey may not accurately reflect practice in the coming years. Because of the small proportion of published audit reports on environmental reports, no statistical analyses were performed.

The research in relation to the communications gap is limited to differences in expectations between auditors and companies in relation to their particular audit engagement and related audit report. Because of the differences in audit engagements no comparison is made between the differences in expectations of companies as such or of auditors as such.

The survey provides no insight into the needs of companies in general in relation to the audit of environmental reports. The only general question raised in the survey is the question in relation to the interpretation of the statement 'the environmental report gives a true and fair view'.

The survey has been limited to companies and auditors. Users of audits may have different expectations of the particular engagement and may have different needs of auditing environmental reports in general. For instance advice on the environmental management system may be a need of the company that is not shared by users.

5.4 Research results

5.4.1 Contents of the audit reports

Before answering the research questions some details are given regarding the contents of the audit reports and the wording used in the opinion paragraph.

The scope of the engagement

(1) The subject matter of the engagement

The subject matter of all engagements but one was the content of the environmental report. In one case, the subject matter of the engagement was the environmental performance indicators, which were listed on one page of the environmental report. In two cases, specific reference was made to the fact that the environmental monitoring and operating procedures were also subject to audit.

(2) The objective of the engagement

None of the reports by accountants made reference to the objective of the audit engagement, compared to four out of seven reports by environmental consultants. Where a reference to the audit objective was made, the objective appeared to be similar, namely verification of the subject matter of the audit. Compliance with legislation was mentioned in only one case.

Both the wording ‘review’ and ‘verification’ are used, but in all conclusion paragraphs a positive form of assurance is given, even by accountants. In some engagements the audit procedures performed go beyond those normally performed in the case of a review of financial statements, but are less than those performed for an audit of financial statements.

Audit criteria

In only five out of ten audit reports, reference was made to the audit criteria used, in two out of three cases by accountants, as compared to three out of seven cases by environmental consultants. In the audit reports issued reference was made to: the CEFIC-guidelines on environmental reporting for the chemical industry; the standards developed within the company, industry and society; the company’s environmental report of the previous year; standards such as BS 7750, ISO 9000, and ISO 10011; the UNEP and CEFIC guidelines; and, emerging best practice in corporate environmental reporting.

The wording of the opinion paragraph included in the audit report

Opinions were often given on different subject matters, such as, for example, written statements, environmental data, targets and description of environmental management system, sometimes resulting in a general opinion. In general, the opinion of accountants was more carefully worded than that of environmental consultants. Accountants did not use the expression ‘true and fair view’. In six out of the seven audit reports issued by environmental consultants, the expression ‘true and fair view’ or a variation of this expression, such as fair and honest, or fair reflection, or true representation was used (see table 5.2).

Table 5.2 - Inclusion of an opinion paragraph in the audit reports that were part of this research

Form of statement used in opinion paragraphs	Accountants	Environmental consultants	Total
“True and fair”	-	5	5
“True”	-	2	2
“Fair and honest”	-	1	1
“Fair”	-	1	1
Accurate (e.g. valid and accurate)	-	3	3
Reasonable, reliable or valid (e.g. consistent and reasonable/valid representation)	-	1	1
Properly collated (e.g. compiled with due care)	2	-	2
Free of material error, nothing came to our notice	1	-	1
Consistent with other requirements	1	1	2
Total engagements	3	7	10

In the next section, the results of the survey are discussed. In the survey, both companies and auditors were asked to answer questions regarding their expectations of the audit engagement and the interpretation of the audit report. A list of ten possible assertions was provided in the question in relation to the contents of the audit engagement and the interpretation of the audit report. Respondents were asked to indicate their responses using a five-point Likert-scale. The selection of the assertions was based on assertions mentioned in research in relation to the expectations gap concerning auditors' reports on financial statements and on personally perceived differences in expectations acquired as a result of other research on environmental reports.

5.4.2 Difference in interpretation of the audit report

A difference in the level of assurance perceived amongst the assertions given provides an insight into the existence of a communications gap. The management of companies may not perceive the same level of assurance as was intended by the auditors of environmental reports. This may be due to a misinterpretation of the scope of the audit report and the audit opinion, but may also be due to a difference in expectation regarding the scope of the audit engagement.

The management of companies and auditors were asked in advance to indicate the level of assurance provided by different audit assertions. The answers were given using a five-point Likert scale, varying from full assurance to no assurance.

To provide an insight into differences in interpretation of the audit report, the responses of the management of companies were compared with those of the auditors who issued the respective audit report. For each audit report a comparison per assertion was made and any differences were expressed in terms of higher or lower levels of assurance. For example, if the company indicated full assurance and the auditor indicated almost no assurance, the difference in assurance was classified as two levels (table 5.3). The reference base for table 5.3 is the interpretation of the auditor. This reference base was chosen for all comparisons since the most disturbing situations to identify are those where the companies perceive greater assurance than the auditor intended to give. One level higher means that the company perceived more assurance on the assertions mentioned in the table than the auditor intended to give (e.g. the company answered almost full assurance and the auditor answered neutrally). Differences of more than one level are significant.

Overall, there was a 38% level of agreement on the interpretation of the audit report, with 84% being within plus or minus one level of assurance. In 36% of cases the management of companies perceived more assurance than the auditor intended to give and in 25% of cases, less assurance than the auditor intended to give. In particular, more assurance than that intended by the auditor was perceived by companies in relation to the assertions on full disclosure; on the presentation of information; on material misstatements; and, on the real polluting substances emitted. The first four assertions are the most important topics on which the audit report assurance is given. In contrast, in regard to compliance with environmental legislation and the effectiveness of the environmental management system, companies perceived there to be less assurance.

If these differences in interpretation between companies and auditors exist even though companies have knowledge relating to the scope of the audit engagement, it seems fair to assume that greater differences in interpretation will arise between users of environmental reports and auditors, especially in cases where the scope of the audit engagement is not, or only briefly, mentioned in the audit report. It may therefore be considered important to

provide guidance to auditors on the level of assurance provided in the case of each audit objective.

Table 5.3 - Comparison of the interpretation of the company with that of the auditor, in relation to the level of assurance provided in the audit report

The base level is the opinion of the auditor. One level higher means that on the 5-point Likert scale, the company perceived one level more assurance than that intended by the auditor auditors

	>one level higher	one level higher	Same	one level lower	>one level lower	Total
The view presented by the environmental information as a whole corresponds with the environmental issues of the company	1	3	4	2	0	10
Full disclosure of all material matters relevant to the proper presentation of the environmental information	1	4	3	2	0	10
The information is presented adequately and in a consistent way	1	4	4	1	0	10
The information presented contains no material misstatements	1	5	3	1	0	10
The substances as reflected in the environmental performance report correspond with the real polluting substances emitted	0	4	5	0	1	10
The environmental information system, including the internal controls are adequate to provide reliable information	0	1	8	1	0	10
No environmental fraud has been committed by the company	1	2	4	2	1	10
The company complies with environmental legislation	0	3	2	3	2	10
The environmental management system is effective*	0	1	3	2	3	9
The company continuously improves its environmental performance	0	4	2	1	3	10
Total *	5	31	38	15	10	99

* In one case complete assurance (company) vs. not applicable (auditor)

5.4.3 Variations on the wording ‘true and fair view’

It is possible that auditors use variations on the term ‘true and fair view’, such as ‘fair reflection’, to indicate the difference between audit reports on environmental reports and those on financial reports. However, users of environmental reports may not perceive such a difference.

In general, the opinion that "the environmental report gives a true and fair view" should provide greater assurance on assertions than most of the other forms of assertions provided in

audit reports. Table 5.4 compares interpretations given to the different assurance statements included in the audit reports on environmental reports.

A standard 'score' is given to the interpretation that "the environmental report gives a true and fair view". An interpretation of one level higher than the standard score applies where the audit report is perceived to give more assurance on a particular assertion than the "true and fair view". The interpretations of both companies and auditors are reflected in the table. Interpretations of one level higher or more than one level higher than the standard may be considered particularly disturbing since they imply that an audit report provides more assurance than the opinion that "the environmental report gives a true and fair view"!

In total, 64% of the replies received from companies and 54% of the replies received from auditors perceived that the audit report gave the same level of assurance on the various assertions mentioned above as the opinion that "the environmental report gives a true and fair view". Although in six audit reports the wording 'true and fair view' or similar expressions were used, the audit reports were not the explanation for the correspondence in the perceived level of assurance between the opinion in the audit report and the opinion "the environmental report gives a true and fair view". Also, in the case of the more carefully worded opinions correspondence in the level of assurance between the opinion given and the opinion "the environmental report gives a true and fair view" is found in relation to various assertions, both by the company and the auditor. Another disturbing finding is the fact that for 15 companies (15% of cases) and 10 auditors (11%) the audit report was perceived to provide *more* assurance on the various assertions, for example on continuous improvement, and on environmental fraud. None of the assertions was scored as providing more or only less assurance than that provided by the audit report in comparison to a 'true and fair view' opinion. More (15%) and less (21%) assurance on assertions is almost equally divided in the case of the company's interpretation. Auditors, however, more often (35%(31) compared to 21%(21)) interpreted that their audit report gave less assurance on the assertions mentioned than the opinion that "the environmental report gives a true and fair view".

Differences in terminology used to express the opinion may obviously not be interpreted as providing less assurance. In any event, if certain terminology is used with the express intention of providing less assurance than 'true and fair', this may not always be interpreted as such by the management of the company. It is also possible that the wording 'true and fair view' is intended to give less assurance than is usually provided in audit reports on financial statements, given that the latter wording is already used while environmental information systems are still at an early stage in their development.

Table 5.4 - Differences between the interpretation of ‘true and fair view’ and the opinion provided by the auditor

Basis: the interpretation of “The environmental report gives a true and fair view”

Assertion	>one level higher	One level higher	Same	One level lower	>one level lower	Total
<i>The view presented by the environmental information as a whole corresponds with the environmental issues of the company</i>						
Company	0	1	7	1	1	10
Auditor **	0	1	4	4	0	9
<i>Full disclosure of all material matters relevant to the proper presentation of the environmental information</i>						
Company	0	3	4	2	1	10
Auditor **	0	2	3	4	0	9
<i>The information is presented adequately and in a consistent way</i>						
Company	0	2	6	2	0	10
Auditor **	0	0	6	3	0	9
<i>The information presented contains no material mis-statements</i>						
Company	0	1	7	2	0	10
Auditor **	0	0	5	4	0	9
<i>The substances as reflected in the environmental performance report correspond with the real polluting substances emitted</i>						
Company	0	1	7	0	2	10
Auditor **	0	0	5	4	0	9
<i>The environmental information system, including the internal controls are adequate to provide reliable information</i>						
Company	0	1	7	2	0	10
Auditor **	0	1	5	3	0	9
<i>No environmental fraud has been committed by the company</i>						
Company	0	1	8	1	0	10
Auditor **	1	2	3	3	0	9
<i>The company complies with environmental legislation</i>						
Company	0	1	8	1	0	10
Auditor **	0	2	4	3	0	9
<i>The environmental management system is effective</i>						
Company	1	0	6	1	2	10
Auditor*/**	1	0	6	1	0	8
<i>The company continuously improves its environmental performance</i>						
Company	2	1	4	1	2	10
Auditor **	0	0	7	2	0	9
Total companies	3	12	64	13	8	100
Total auditors */**	2	8	48	31	0	89

*In one case almost full assurance vs. not applicable;

** One auditor did not answer the question regarding true and fair view

5.4.4 Interpretation of ‘true and fair view’

A misinterpretation of the scope of an audit report may be due to a misinterpretation of the wording used in the opinion paragraph of the audit report. If the wording ‘true and fair view’ already provides too much comfort in the case of audit reports on financial statements, then clearly this same misinterpretation may also exist in the case of audit reports on environmental reports.

It was expected, a priori, that the first six assertions mentioned in Table 5.4 above would create a perception of almost complete assurance. It is worrying, however, that respondents perceived complete assurance for all ten types of assertion in a total of 74 cases (see Table 5.5)! Although accountants are expected to be aware of the inherent limitations of auditing (Blokdijs, 1988), all three accountants included in the survey answered with complete assurance in a total of ten times.

The most important differences in the perceived level of assurance arose in relation to the assertion concerning the detection of environmental fraud. Although accountants perceived relatively little assurance in this area, companies and environmental consultants perceived almost full-to-full assurance. Differences in interpretation were also found in relation to compliance with environmental legislation and improvements in environmental performance. There was no consensus within the company respondent group in relation to the effectiveness of the environmental management system.

Although there was a difference in interpretation between accountants and environmental consultants, in general, the latter group assumed more assurance in relation to the different assertions.

As in the case of auditor’s reports on financial statements, there appears to be no consensus in relation to the level of assurance given on fraud and the effectiveness of (part of) the management system in audit reports on environmental reports. The level of assurance perceived in relation to the first four types of assertion is almost the same as that in the case of financial statements.

In summary, the results of this research are alarming in that they provide evidence which suggests that a higher level of assurance is being perceived than may reasonably be assumed given the inherent limitations of auditing. A comparison of the interpretation ‘true and fair view’ in the case of companies with that of auditors suggests that, in relation to the various assertions given, auditors perceived more assurance in 26% of the cases, but in 34% of the cases less assurance was perceived than by the respective companies.

Table 5.5 - Interpretation of the ‘true and fair view’

Assertion	Complete assurance	Almost complete assurance	Neutral	Almost no assurance	No Assurance	Total
<i>The view presented by the environmental information as a whole corresponds with the environmental issues of the company</i> Company Auditor	4 6	5 3	1 0	0 0	0 0	10 9
<i>full disclosure of all material matters relevant to the proper presentation of the environmental information</i> company auditor	4 5	4 4	2 0	0 0	0 0	10 9
<i>the information is presented adequately and in a consistent way</i> company auditor	6 4	4 4	0 1	0 0	0 0	10 9
<i>the presented information contains no material misstatements</i> company auditor	8 6	2 3	0 0	0 0	0 0	10 9
<i>the substances as reflected in the environmental performance report correspond with the real polluting substances emitted</i> company auditor	7 3	2 6	1 0	0 0	0 0	10 9
<i>the environmental information system, including the internal controls, is adequate to provide reliable information</i> company auditor	1 2	9 7	0 0	0 0	0 0	10 9
<i>no environmental fraud has been committed by the company</i> company auditor	3 3	3 3	3 2	0 0	1 1	10 9
<i>the company complies with environmental legislation</i> company auditor	2 1	1 5	3 2	2 1	2 0	10 9
<i>the environmental management system is effective</i> company auditor	3 1	1 5	4 2	1 1	1 0	10 9
<i>the company continuously improves its environmental performance</i> company auditors	3 2	1 6	2 1	3 0	1 0	10 9
Total companies	41	32	16	6	5	100
Total auditors	33	46	8	2	1	90

5.4.5 Difference in expectations in relation to the audit engagement

Evidence on differences in expectations in relation to the audit engagement provides some insight into the communications gap arising out of a misinterpretation of the auditors' function.

Table 5.6 compares the expectation of the company with what the auditor believes is expected of him/her. The reference base, as regards the level of expectations of companies, is the expectation of the auditor. In this table, one level higher means that the company's perception in relation to the expectation was one level more important than the respective auditor's perception (e.g. the company answered quite important and the auditor answered neutral). Differences of more than one level would appear to be important.

In only one third of cases, there was complete agreement between the companies and the auditors (although in over 75% of cases there was a difference of one level or less). Notably, companies' expectations are higher regarding detecting errors in environmental performance data and written statements. Important variances in expectations may be found concerning the opinion on the work performed by the internal audit team, the detection of emissions not reported and the detection of environmental fraud committed where company expectations were higher. Differences arise not only in the sense that the company perceives certain audit objectives as being more important, but also in the opposite sense, namely that there are also engagements in which the company perceives certain audit objectives as being of less importance compared to the auditor. This was the case for example for advice on the environmental management system; opinion on the adequacy and design of the environmental report; and deficiencies in the environmental information system.

Obviously, expectations amongst auditors and companies differ. It is not clear what might be expected of auditors. Given that engagements differ, it is important to clearly state the purpose of the audit, both in the audit engagement letter and in the audit report itself.

The answers to these first four research questions provided evidence which suggests that we are witnessing the emergence of a communications gap. Although companies are aware of the scope of the audit engagement, differences exist between the actual interpretation of the importance of possible objectives of the engagement. Also some differences exist in relation to the interpretation of the audit report and the interpretation of the phrase "true and fair view". Variations on "true and fair view" as used in the various audit reports, and the opinions on different subject matters are not always interpreted in the way the auditor intended. The next research question provides some insight into the performance gap.

Table 5.6 - Perceived differences in importance between auditors and companies concerning expectations in relation to the audit

Expectation of the audit	>1 level higher	1 level higher	Same	1 level lower	>1 level lower	Total
opinion and advice on the adequacy of the design of the environmental report*/****	0	2	1	4	1	8
opinion on the completeness of the disclosure	1	3	4	1	1	10
detect errors in environmental performance data	0	4	6	0	0	10
detect errors in written statements	0	3	5	1	1	10
detect deficiencies in the environmental information system, including the internal controls	0	3	3	4	0	10
opinion on the work performed by the internal audit team**/**	3	1	1	2	1	8
detect emissions that were not reported	3	1	3	2	1	10
detect environmental fraud committed	2	2	2	2	2	10
detect non compliance with environmental legislation that applies to the company	1	0	6	1	2	10
advice on the environmental management system	1	2	1	5	1	10
Total	11	21	32	22	10	96

* In one case, little importance vs. nothing; ** In one case, not applicable vs. quite important; *** In one case, quite important vs. not applicable; **** In one case no answer

5.4.6 Solid basis of the opinion provided in the audit report

Use of the phrase ‘true and fair view’ or similar expressions in cases where the audit procedures performed are less than those required for the audit of financial statements is likely to result in auditors giving too much comfort to users of environmental reports. To provide an insight into the potential performance gap, the audit procedures that form the basis of the auditor’s opinion are compared to those described in the International Standards on Auditing. The description of audit procedures performed is based on the information contained in the audit report itself. As shown in Table 5.7 below, for each audit report a description is provided of the audit procedures performed and the wording of the opinion. Based on these examples, it appears that the opinions of accountants are formulated more carefully than those of environmental consultants, who with one exception use expressions such as ‘true and fair’ and ‘true/fair reflection’. The audit procedures performed are described in a different way. In Table 5.7 therefore some overlap may occur. From a reading of the audit

report it is not possible to say whether the review of systems and procedures was based simply on a document review and interviews or whether an examination of the operation of these systems and procedures in operation was also carried out. However, based on the information available, it does appear that the audit procedures consist mainly of a review of (parts of) the process of environmental information management. The nature of the audit work performed differs both in terms of the extent of the procedures and the depth of those procedures. In some cases, the reliability of the primary registration of emissions is reviewed, but more often the primary registrations, as provided by the different sites, form the starting point of the review. One is left with the impression that no substantive procedures are performed. The information provided in the audit report however is insufficient for the purpose of forming a view as to whether the audit procedures performed provide a reasonable basis for the opinion given in the audit report. Nevertheless, if, as suggested by the findings of this research, procedures performed do not match the procedures which, given the opinion provided, may reasonably be expected from the auditor, a performance gap exists. Further research, however, is necessary in this area.

Table 5.7 - Audit procedures that form the basis of the opinion, described for each audit report

Audit report	1	2	3	4	5	6	7	8	9	10
Audit procedures performed:										
Review environmental policy			x				x	x		
Review quantitative and qualitative data that form the basis of the data presented in the environmental report	x				x	x		x		x
Review of the calculation method used for the indices		x								
Audit of environmental performance indicators										x
Review of all significant environmental issues presented in the environmental report				x						
Review of the environmental information system, from measurement through to reporting			x		x					
Review of the monitoring and reporting system								x	x	
Review of the method of data collection and aggregation of data (from site to corporate)				x	x	x	x	x		x
Used audit techniques:										
Interviews/discussion	x			x	x	x	x	x		x
Site visits	x				x		x	x		
Review of documents	x				x	x	x	x		x
Review of the internal verification process							x			
Testing of calculation method		x								
Opinion	A	A	A	B	B	B	B	B	A	B

Opinion: A= free of material errors/compiled with due care/adequate system

B = fair reflection/representation/true and fair view/picture/fair and honest

5.5 Conclusions

The audit of environmental reports is still in the early stages of its development, with as yet no standards for the form and content of the audit report itself. The question as to whether the inconsistency that currently exists in auditing environmental reports could lead to an expectations gap has to be answered in the affirmative. The exploratory research on differences in expectations between companies and auditors provides evidence for the existence of an expectations gap. Based on the results of the empirical study, a number of tentative conclusions can be drawn:

A communications gap already exists due to differences in: the content of audit reports; the interpretation of the phrase 'true and fair view'; and the interpretation of the audit engagement.

1. The way in which companies interpret the results of an audit differs from the auditor's intended interpretation. In 36% of cases relating to the comparisons of expectations regarding the level of assurance provided by the audit report, companies perceived more assurance than was intended, whereas in 25% cases, companies perceived less assurance than was actually provided. In relation to three issues, namely, the view presented, material misstatements and emissions of polluting substances, more assurance was perceived on the part of companies than was intended by the auditor. Conversely, in relation to the effectiveness of the environmental management system, companies perceived less assurance than the auditor intended.
2. The actual level of assurance as perceived by both companies and auditors is higher than might reasonably be expected. In 79% of cases, companies believed that the audit report gave the same level of assurance (64%) or more assurance (15%) than is provided by the statement that the environmental report gives a 'true and fair view'. The study provides evidence to suggest that companies do not perceive any difference in terms of the level of assurance provided by the various forms of wording used. There is also evidence to suggest that the auditors themselves do not always intend to provide less assurance by using these expressions, or even by using a more carefully worded form of opinion. More worrying perhaps is the finding that, in relation to audit assertions the auditors believed that they gave the same level of assurance (54%) or more assurance (11%) than is provided by the statement that "the environmental report gives a true and fair view".
3. Due to the inherent limitations of auditing, the statement that the environmental report gives a 'true and fair view' cannot be interpreted as providing full assurance on certain audit assertions. Nevertheless, for the audit assertions examined in this study, 41(41%) interpretations by companies, 10 (11%) interpretations by accountants and 23 (26%) interpretations by other environmental consultants assumed full assurance. There was no overall consensus as to the level of assurance provided for the assertion concerning the

detection of environmental fraud, compliance with environmental legislation and improvement in environmental performance.

4. In only 33% of cases did there appear to be agreement between the expectations of companies and those of auditors of the work performed. Companies' expectations were especially high for the detection of errors in the environmental performance data and written statements. The expectations of companies differed from those of auditors with regard to the detection of environmental fraud, compliance with environmental legislation and advice on the environmental management system.
5. A performance gap may already have emerged due to the fact that the audit procedures performed for environmental reports seem to differ, both in terms of scope and depth, from one auditor to another and are less than those required by the ISA for the audit of financial statements. However more research is needed in this area.

Although the empirical results of this research have been based on a small absolute number of responses (reflecting the relatively small number of audited environmental reports), these results show the need for further research and for discussing issues of policy and practice in this rapidly evolving area of auditing.

It is clearly important for auditors of financial statements to be aware that other independent professionals also provide assurance on information published for accountability purposes, such as the environmental report. In the audit of environmental reports, these auditors are using expressions such as 'true and fair view'. Providing assurance on environmental reports seems to be a new field of expertise for the traditional financial auditor, one in which they are still exploring how best to express their opinion in an unambiguous way. It is crucial, in the interest of all concerned, not to allow an expectations gap to emerge in this new field. Therefore insight should be gained into both the needs and expectations of the users of environmental reports. In order to reduce the expectations gap in relation to financial auditing and improve the quality of tasks performed by the auditor a number of recommendations are made (e.g. Berendsen, 1990; Olders, 1997; Macdonald & Glasz, 1995; Reilly & Parker, 1996). Examples are the improvement of communication between accountants and users, the implementation of quality control standards, continuous education, peer reviews and partner rotation.

The research results confirm the relevance of developing a framework for the audit of environmental reports. In the next chapters empirical evidence is obtained on the audit process, especially the planning, and on the quality of audit reports.

Chapter 6 The audit process, a risk based approach

6.1 Introduction

In this chapter the discussion of audit process and especially the exploration stage of the framework of auditing environmental reports is further refined using the practical experience of environmental auditors. In this stage the subject matter of the audit, the audit objectives and audit criteria and related indicators are further refined. Further, the availability of suitable audit criteria is explored. An important issue is the evaluation of internal control in order to assess the extent to which the auditor can rely on this internal control. The planning as part of the exploration stage is of importance for the efficient and effective design of audit procedures. The planning has major implications for the whole audit approach. In order to further develop the framework for the audit of environmental reports it is important to gain an insight into the way the audit judgements are made during the planning stage and which risks are identified and taken into consideration. Such insight can be gained by identifying the knowledge of auditors who actually perform the audit of environmental reports. However, the unstructured interviews conducted (in 1994) at five of the then six biggest audit firms (one big 5 firm in the Netherlands was not involved in the audit of environmental reports) revealed that insufficient attention was devoted to the planning of the audit of environmental reports. The planning process was not documented, not structured or sometimes not even performed, especially by environmental consultants. Describing actual audit tasks therefore would not provide sufficient insight into the planning process. Although the planning in the actual audits may be described as very poor, during these audits the auditor makes some implicit evaluations in order to choose the next audit procedures to be performed. Alternative ways of research have to be designed to reveal these implicit evaluations. A sufficient understanding of internal control is to be obtained to plan the audit and to determine the nature, timing and extent of tests to be performed (Akkresh et al., 1988). The judgement on the sufficiency of the information system within the environmental management system and the related internal controls is the most essential part of the planning stage. A major problem with the existing unstructured practice is that the lack of planning or the fact that only limited time is spent on the planning may result in inefficient and ineffective performance of audit procedures and may eventually lead to a lack of sufficient evidence for the audit opinion.

The lack of sufficient time may be partly explained by the fact that the reporting entity does not always recognize the benefits of a full scope audit and therefore only wants to spend a limited amount of money on the audit. The audit of environmental reports is still voluntary and therefore the reporting entity is free to choose the scope of the audit. In practice, limited budgets lead to both scope limitations and to time pressure on the available budget for the audit. In addition, the competition between different kinds of auditors is severe. To gain insight into such relationships, however, further research on scope limitations and time pressures is necessary. This is not covered in this thesis.

6.2 Research method

The primary goal of the research in this chapter is to reveal existing knowledge that is used during the planning decisions that are implicitly made during actual audits of environmental reports. This improved understanding together with the existing literature on auditing and especially the planning of audits may further refine the framework. Therefore experienced auditors were used in the research performed.

The planning of the audit of environmental reports is quite an unstructured task, given the limited experience and the lack of guidance. Research results (Gul, 1984) suggest that personal characteristics affect the kind of data that is collected. In addition, experience plays an important role. An experienced researcher for instance collects different kinds of data and makes different connections between the data than an inexperienced auditor would (e.g. Abdolmohammadi and Wright, 1987; Biggs et al., 1988; Johnson et al. 1989; Frederick, 1991; Libby and Luft, 1993; Christ, 1993).

Research method

The data for this research was gathered and analysed in several different ways in several distinct phases:

1. The first phase involved reviewing academic and professional literature and interviewing experienced auditors in an unstructured way. In addition, an auditor was asked to write down the risks identified and the evaluation process that was performed during an EMAS verification. The goal was to identify risk factors that have to be taken into account when planning an audit. In addition a better understanding was gained of the context in which assessments are normally made by auditors;
2. The second phase of the research was to describe an actual case that could serve as basis for the verbal protocol analysis. Given the complexity of environmental matters, I have chosen to describe an actual reporting entity. The identification of the risk factors in the previous stage of the research was the starting point for describing all matters that may be of relevance for the planning of the audit. None of the research subjects was involved in any way in the case that was chosen;
3. The third phase involved the performance of the verbal protocol analysis (see below for the motivation). At the time of the research (end 1997) the field of auditing environmental reports in the Netherlands was still very small and only a few auditors were involved. All of these were included in the research. With regard to the EMAS verification, only the certifying body participated that was affiliated with an audit firm. All these auditors (in total 10 from three different audit firms) had limited experience, given the then current state of the art, but it was almost all the experience available at that time in the Netherlands. The research subjects thought aloud on the description of the case study described in the previous stage. During this process the research subjects gathered information from the case study and from their memory and evaluated this information in

order to identify risks of material misstatements in the environmental report and then to identify the most appropriate audit procedures that needed to be performed;

4. The fourth stage involved analysing the data gathered during the verbal protocol analysis. The interviews were recorded on two different tape recorders and were transcribed on paper. Next, the verbal protocols were coded. A distinction was drawn between data gathering, evaluation, conclusions and action. Next, the data that were gathered both from the case study and from memory were identified. In addition, some insight was gained into the knowledge used, and the points that were taken into consideration during the evaluation were revealed. In addition, the conclusions on risks and requirements for internal control within the company were identified. The verbal protocols also revealed the future actions in terms of the description of the audit procedures that would be performed by the research subjects;
5. The fifth stage consisted of analysing all the data collected and presenting it in a structured way as a specification of the general framework for auditing environmental reports. While this research project did not result in either a definitive model of risk assessment or a working audit tool, it did provide evidence about the nature of risk assessments during the audit planning. The assessment not only involves the identification of the risk but a causal explanation of how error could occur.

Motivation for the choice of the research method

Various different techniques are available for the performance of the empirical research, such as:

- Working papers review: existing working papers can be consulted to identify to what extent considerations relating to the planning are documented in order to motivate the audit approach;
- Observation: observation in practice can be used to identify which considerations are made and which cues are used;
- Simulation: based on a case, whether realistic or not, that is presented to the research subjects through a computer or in an oral form; the subjects are then asked to solve the problem;
- Survey/interview: research subjects receive more or less structured questions with the purpose of identifying knowledge, opinions and conceptions of tasks.

The following considerations applied to the choice of the empirical research method:

- The exploratory interviews on the audit approach of the audit of environmental reports it showed that a structured audit approach, was lacking, especially on the part of environmental consultants. For the audit of the environmental management system however they use a structured check-list;
- The audit approach is developed in the field. Working papers therefore include no evidence for the motivation of the audit approach. Observation in a field situation is difficult, because the planning itself is not documented and the planning process is something that takes place in the auditor's mind;

- A disadvantage of simulation is that there is often a certain distance compared with an actual field situation. In addition, there is the risk that there will be moments when the research subject is not thinking aloud anymore. Using an actual case description as a basis for thinking aloud can solve the problem of the distance to the actual field situation. The risk of not thinking aloud can be reduced by providing clear task descriptions in advance and by drawing attention to the fact that the research subject is silent during the process. If necessary the whole protocol can be reviewed together with the research subject;
- A disadvantage of questionnaires is that they do not reveal the process of judgement. There is a risk of a certain bias in the research owing to the way the questions are asked. Especially with subjects with different backgrounds participating in the research, differences in the process of judgement may occur that were not thought of in advance. In addition, there is a risk that desirable answers will be given. On the other hand, interviews provide an opportunity to ask more focused questions.
- The type of evidence obtainable in a protocol study forms an important first step in developing knowledge that will ultimately result in improved auditor judgement. (Biggs & Mock, 1983).

The following considerations applied in the selection of the research subjects:

- Abdolmohammadi & Wright (1987) indicated decision differences between experienced staff (managers and partners) and inexperienced subjects (students and junior auditors) for unstructured and structured tasks relating to the audit of financial statements. Significant experience effects were found for unstructured tasks. This suggests that accounting students or less experienced staff are dubious surrogates in such audit decisions settings. Using accounting students and less experienced staff in auditing research may cause a loss in external validity. Therefore auditors need to be used in this research.
- Both judgement insight and judgement consensus increase with increased levels of auditing experience. More experienced auditors appear to be better able to describe their own judgement processes than are less experienced auditors. Further, auditors who are more experienced tend to agree in their judgements more closely than do less experienced auditors. The consistency of judgement policies is greater for more experienced auditors than for less experienced auditors (Ashton & Brown, 1980; Ashton en Kramer, 1980; Hamilton and Wright, 1977). In addition, experts seem to be able to combine critical cues in such a way that they represent a pattern that is recognised as fraud. Novices do not have such knowledge, although they pay attention to the same cues as the expert (Johnson et al., 1989). Therefore auditors with experience in the field of auditing environmental reports need to be used.

Based on the previous considerations, I have decided to perform the research in the following way:

1. Verbal protocol analysis, where experienced auditors are asked to think aloud.

2. Questionnaire, in which the auditors identify the kind of information that was important for their judgement. The answers are given on a five-point Likert-scale.

Verbal protocol analysis

Subjects think aloud as they perform a task. The verbalisations (called verbal protocols) are tape recorded and transcribed for analysis. The verbal protocol analysis provides a step-by-step trace of each subject's decision processes as they perform a task, which allows the researcher to gain an insight about (Biggs et al., 1993):

- What information was acquired:
 - internal source (memory);
 - external source (task information).
- How the information was used;
- What reasoning process operated on the information used;
- What decisions were made.

There are two types of verbal reports:

1. Concurrent verbal protocols - verbal reports are collected as the task is being performed;
2. Retrospective verbal protocols - verbal reports are collected after the task has been performed.

The advantage of verbal protocols lies in the richness of detail and the high temporal density of oral responses obtained during a subject's task performance (Biggs and Mock, 1983). If a subject is verbalising information that is currently being attended to (i.e. short-term memory), the act of verbalising slows down but does not affect the course and structure of the cognitive processes (Ericsson and Simon, 1980).

Under a variety of circumstances, however, a subject's verbal protocols may omit information used to perform the task. These omissions seem to be related to four primary causes (Ericsson and Simon, 1980):

- A subject's inability to recall the information in a retrospective verbal report (not stored or cannot be retrieved). In the retrospective protocols the subject verbalises after performing the task and therefore must remember what happened during the task in order to respond. Remembering involves an intermediate cognitive process coming between the task performance and the act of verbalising;
- Interference in recalling information because of the researcher's specialised probing (e.g. asking for specific information rather than simply allowing subjects to think aloud);
- The subject's inability to describe information related to processes that are known so well that they are performed automatically; and
- The lack of information when a subject falls silent during a concurrent verbalisation.

In order to decrease these limitations a concurrent verbal protocol is performed. The researcher does not interfere in the process by asking specific information. If a subject falls silent while not reading, the subject is asked again to think aloud. The verbal protocols may

not be complete, but pauses that are present in the protocols faithfully represent actual processes (Ericsson and Simon, 1980).

Limitations in the scope of the research and the research method

The scope of this research is limited to the judgement with regard to the planning of the audit of the quantitative data in the environmental report only. Given the lack of generally accepted guidance on environmental reporting itself it is unclear what kind of information should be included on environmental policy, management and future activities. In gaining the insight into the planning of the audit, attention is predominantly given to the importance of the different data collected and the risks identified. The results of different studies (e.g. Newell and Simon, 1972; Payne et al., 1978; Einhorn and Hogarth, 1981; Biggs et al. 1988) suggest that the different steps taken during the process of audit judgement cannot be evaluated separately, because they are interrelated. For the choice of a research method, therefore a method has to be chosen that provides an insight both into the different steps in the judgement process and the relations between these steps.

It is plausible that the existing experience with the audit of environmental reports is reflected in the thought processes implicitly made by auditors of environmental reports. Auditors may follow a certain strategy that is reflected in production rules (Newell & Simon, 1972). Production rules may be assumed to be the building blocks of the judgement process.

The validity of the research results may be limited to some extent since the coding of the verbal protocols involves elements of subjectivity. This limitation is decreased by specifying in advance the coding procedures and making the coding elements consistent with current theory on human information processing (in this case, Newell and Simon, 1972; Einhorn and Hogarth, 1981). The subjectivity is further reduced by performing the analysis twice with a significant time interval in between measuring the reliability by their achieved agreement. In order to prevent sequential differences between the protocols, each time the analysis was performed during an unbroken period of time. Since the main purpose of the research was not to reveal cognitive processes in reasoning, but the kind of information used during the process and the risks identified this was thought to be sufficient.

Further limitations of the research that may affect its validity are:

- experts do not always agree with each other (see for example Ashton, 1974a,b). Variables that seem to account for a substantial amount of decision variance in the ways how experienced auditors performed a complex and realistic audit are (1) information search, (2) internal control reliance, (3) alternatives considered, and (4) decision heuristics (Mock and Turner, 1981);
- experts develop knowledge in time and may reconsider certain viewpoints; and
- knowledge is also client specific.

6.3 Literature review on planning the audit

In order to gain an insight into audit judgements during the planning stage and risk assessment in particular, first the literature on these topics in general was reviewed in as far as this was also relevant for the audit of environmental reports. Next, literature on environmental information and the risk of material misstatements in particular was reviewed. Once this insight was gained, a case description was made which includes the major factors to be taken into account for reliable environmental information.

6.3.1 Literature review on planning the audit in general

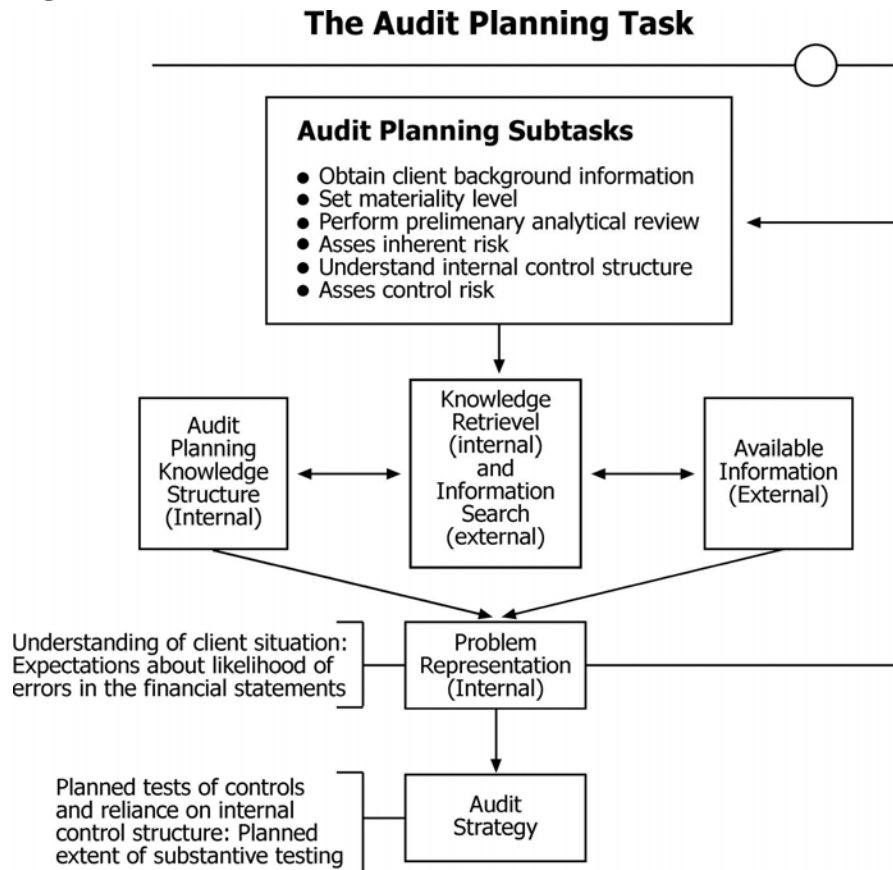
Audit planning task

The planning of the audit forms the basis for an effective audit process. During the planning of the audit, the auditor explores the environmental report and the entity whose environmental performance is reflected in the environmental report. The kind of evidence that will be obtained is influenced by risk analysis. Based on the knowledge obtained of the entity, the environmental aspects of its relevant processes, products and services, its environment and the knowledge of the topics in the environmental report, the inherent risks on material misstatements in the environmental report are estimated. Then evidence is obtained on the way in which the entity controls these risks. The evidence obtained on internal control influences the kind and quantity of substantive procedures that will be performed. The ultimate goal of the planning task is to develop an audit strategy appropriate for the circumstances. This strategy is based on the auditor's expectations about the likelihood of errors in the environmental report (Felix and Kinney, 1992).

Figure 6.1 provides an overview of the audit planning task. The problem representation is a decision maker's understanding and interpretation of the problem situation and is developed by mapping the information available for completing a task into an existing structure related to that type of task. The knowledge structure represents the current state of the decision-maker's domain task knowledge. This has an effect on what information is searched for and how the information is organised and interpreted in the problem representation. Domain-related knowledge develops as a result of experience (Brown and Solomon, 1991; Chi et al., 1982).

As the various planning tasks are completed, the problem representation evolves and the auditor develops an understanding of the likelihood of errors in the environmental report. Throughout this process, audit planning knowledge guides the search for relevant information and the mapping of that information into the problem representation. The problem representation becomes an integration of the available information and the auditor's knowledge about the planning task (Christ, 1993).

Figure 6.1



Source: Christ 1993, p. 307

Audit risk judgements

The audit risk judgement forms an important part of the exploration stage. For the audit of the financial statements, the majority of literature on audit risk judgements is focused on the AICPA's audit risk model. Although AICPA (SAS 47/AU312, 1983) did not intend the model to imply that auditors should necessarily assign numerical estimates to the components of the risk model and then multiply them, it is often presented as follows:

Audit Risk=Inherent Risk x Control Risk x Detection Risk.

The concept (without multiplication) has been adopted by IFAC (ISA 400) and has the following definitions:

- Audit risk (AR) is the risk that the auditor gives an inappropriate audit opinion if the financial statements are materially misstated.
- Inherent risk (IR) is the susceptibility of an account balance or class of transactions to misstatements that could be material, when aggregated with error in other balances or classes, assuming that there were no related internal controls.

- Control risk (CR) is the risk that error could occur in an account balance or class of transactions and that could be material, when aggregated with error in other balances or classes, and will not be prevented or detected on a timely basis by the accounting and internal control systems.
- Detection risk (DR) is the risk that an auditor's substantive procedures will not detect a misstatement that exists in an account balance or class of transactions that could be material, individually or when aggregated with misstatements in other balances or classes.

Research results from Peters, Lewis and Dhar (1989) suggest that auditors do not consider it appropriate to generate numerical estimates of risks on an account to account balance (in relation to the audit of financial statements), but instead assess a client's financial statements using knowledge about changes in the industry and/or the client, management motivations, prior track records and so on.

Therefore, the following presentation of the model seems more appropriate:

$$AR = f(IR, CR, DR)$$

Although it was developed for the audit of financial statements, a similar approach could be described for the audit of environmental reports:

- Audit risk means, in this case, the risk that the auditor will issue an inappropriate audit opinion if the environmental report is materially misstated.
- Inherent risk means the susceptibility to misstatement of an item or group of items included in the environmental report assuming that there were no related internal controls.
- The control risk means the risk that a misstatement, which could occur in an item or group of items, will not be prevented or detected and corrected on a timely basis by the environmental information system and internal controls.
- The detection risk is the risk that an auditor's substantive procedures will not detect a misstatement that exists in an item or group of items that could be material, individually or when aggregated with misstatements in other items.

There are three main steps in the risk assessment process. First, the auditor sets an acceptable level of audit risk. Second, inherent and control risks are assessed. Finally, the level of detection risk needed to achieve the acceptable level of audit risk is established.

The audit risk assessment can be applied at two levels, the report level and the account level. Tables 6.1 and 6.2 show the inherent risk factors.

Table 6.1 – Inherent risk factors on report level

Report level	
General	Entity-specific (continuation)
General level of economic activity	Emphasis on meeting targets
Governmental policies	Existence of budgets and plans and how close the entity is to achieving them
Political environment	Changes in ownership
Legal requirements	Expectations created by the client in the financial markets
Industry-specific	Concern shown by the client for the audit
Nature of the industry	Quality of information systems
Factors affecting the industry in which the entity operates, for example economic and competitive conditions	Misstatement in prior year's audit
Location of the product in the life cycle, demand for the product and special problems faced by the industry	Existence and quality of the internal audit function
Profitability of the entity relative to its industry	Management
Rate of change in entity's industry	Perceived level of management integrity
Business failures in the entity's industry	Management (and staff) experience and knowledge (background and training)
Cyclical or seasonal activity	Turnover and changes in management
Changes in product technology	Unusual pressures on management, for example, circumstances that might predispose management to misstate the financial statements or other reports
Declining or expanding operations	Management operating staff and financing decisions are dominated by a single person
Environmental requirements and problems	Management's attitude towards financial, environmental and social/ethical reporting
Regulatory framework	Existence of management compensation plan tied to accounting numbers/environmental performance
Adverse conditions	Management reaction to any existing general problems
Entity-specific	Degree to which judgmental procedures are scrutinised by higher levels of management
Nature of the entity's business	Degree to which judgmental procedures are specified by company policy
Nature of the entity: size and sophistication; form of ownership; multinational; multilocation; conservative or liberal corporate culture; degree of centralised control	Personnel
Location of the production facilities, warehouses, offices	Experience of personnel
Legislation and regulation that significantly affect the entity	Knowledge of accounting
Liquidity status	Judgements errors in e.g. estimates
New client with insufficient audit history	Mechanical errors such as posting, coding, calculation
Staffing of the accounting department	

These risk factors were identified by literature research (see for instance Hylas and Aston, 1982; Colbert, 1988; Maletta and Kida, 1993; Mock and Wright, 1993; Libby et al., 1985; Peters et al., 1989) and the review of the international standards on auditing (ISA 310) and that might also be of importance for the audit of environmental reports.

In the field of auditing financial statements various research results exist that explain how inherent and internal control risks are related. Research results from Peters, et al. (1989) based on a field study of interviews and observations show for instance that inherent risk assessments are not made in isolation. Inherent risk is closely linked to control risk and auditors tend to assess them jointly. Further, inherent risk is assessed at both general and specific levels. The general level refers to firm-wide factors that might influence error rates in account balances while the specific level refers to factors that affect the error potential in a given account. The joint inherent and control risk assessment process is complex and involves combining qualitative and quantitative evidence to identify the most likely causal linkage between risk factors and potential errors.

Waller (1993), however, found some different results. He studied the inherent and control risk in field settings. The study is based on the working papers of auditors of one firm that requires auditors to document their inherent and control assessments. The research results indicate a negligible association between inherent risk and control risk assessment. More than 80% were high control risk assessments. Differences in control risk assessments were insignificant. According to Waller the explanation can be found in the fact that auditors use control risk assessments primarily as a way to document decisions about (non-)reliance on internal controls. This practice creates doubt about whether the purpose of risk assessment in practice is to guide or confirm the choice of audit procedures. Research results from archival findings of evidential planning show that the audit plans found were quite stable during the years, particularly tests conducted (Bedard, 1989; Mock and Wright, 1995, 1993; Quadackers et al., 1994). This may provide concerns about the effectiveness of audit planning and linking it with actual audit procedures.

By assessing the inherent and control risk at the account level the auditor can develop more thorough estimates of risks and more thorough descriptions of sources of risk (Peters, 1989; Peters et al., 1989).

Table 6.2 – Inherent risk factors on account level

Account level
Magnitude of the account balance
The complexity of underlying transactions and other events which might require using the work of an expert
The degree of judgement involved in determining account balances/ account valuation/selection between different accounting treatments
Susceptibility of assets to removal/theft
Cut-off problems
Level of standardisation of underlying transactions to make up account balances
Degree of technical complexity involved in calculating the account balance
The completion of unusual and complex transactions
Complexity of administrative procedures involved in determining the account balance
Transactions not subjected to ordinary processing
The degree to which external events affect values in the account
Past history of error
Sensitivity of operating results to economic factors (high)
Experience of personnel involved in accounting functions involving the account
Volume of transactions associated with the account
Level of management or staff turnover in departments responsible for individual account balances
Management response to an account specific problem
Degree to which client's financial condition motivates management to misstate the account

6.3.2 Risk factors in relation to the audit of environmental reports

The general risk that needs to be identified is the risk of material misstatements. The inaccuracy of information and the incompleteness and inadequate presentation of the information are the main risks that the auditor of environmental reports faces. Certain factors may indicate such risks. In the environment of the auditee, certain situations may exist that increase the possibility of occurrence of these risks. On the other hand, the auditee may have introduced certain internal controls that limit these risks. This section describes the specific risks of material misstatements in environmental reports. The more general risks have already been discussed in section 6.3.1.

A risk – albeit probably only temporarily - is the lack of attention ISO 14001 devotes to the environmental information process. ISO 14001 provides no explicit procedures especially relating to the process from 'data' to 'management information'. ISO 14001 includes procedures relating to measurement and to monitoring, but there are no requirements relating to the environmental information process. Consequently, companies that implement ISO 14001 may not have implemented any procedures in relation to this environmental information process, which may have severe implications for the risk analysis in relation to the audit of environmental reports.

The lack of an explicit procedure on the environmental information process may lead to an unstructured information process where:

- much data are spread all over the organisation;
- tasks and responsibilities in data collection, processing and reporting are not always clear;
- the information process is not documented;
- questions of internal and external stakeholders are answered by different employees.

Such an unstructured information process may lead to the following risks:

- Risk of registration of information which is not relevant;
- Risk of unreliability (reliable measurements and analyses alone are not sufficient to provide reliable information);
- Risk of insufficient presentation of information, which may lead to insufficient interpretations;
- Risk of not being able to supply information in time, because first different employees need to be consulted;
- Risk of inconsistencies between the different sources used for reporting;
- Risk of loss of knowledge on the accounting process if employees leave the organisation or move to different positions.

Verstegen (1995) also identifies problems relating to the environmental information system. Within companies, separate departments or separate persons are responsible for the environmental information in an organisation. He questions whether the environmental information provides sufficient support for environmental management. People providing the traditional management accounting and people providing environmental information (mostly ex-production or laboratory personnel) have different backgrounds and are in a different stage of development. Consequently, communication between those employees may go wrong. In addition, each may have its own perspective on the problem.

The environmental report contains both qualitative information (e.g. on environmental policy and environmental management) and quantitative information (e.g. on emissions and waste). The risks of material misstatements are the risks that the subject matter, the environmental report, does not comply with the audit criteria in relation to:

- Reliability:
- Completeness: not all items that are relevant to reflect the company's environmental performance are disclosed in the environmental report and/or not all relevant data is disclosed on each item;
- Accuracy: environmental performance data are not included in the environmental report at the proper quantities, other environmental information is not disclosed with regard to the proper date, description and (if applicable) quantity;
- Timeliness: the environmental information is not included in the environmental report in time and/or not in the correct period (matching);

- Existence: environmental policies, targets, measures implemented and internal controls do not exist during the reporting period as described in the environmental report;
- Rights and obligations: rights and obligations do not pertain to the company at a given date;
- Acceptability: methods used and assumptions made are not acceptable, the measurements and sample analyses have been conducted and estimates are not arrived at in an acceptable manner; the methods for measurement, analysis and estimation methods are not consistent. The selection of indicators to express the company's environmental performance is not acceptable;
- Presentation: the information presented on environmental performance is not adequately noted, classified and described and is not in accordance with applicable regulations/guidelines (e.g. chapter 12 of the Environmental Management Act, Eerste Kamer, 1997; GRI, 2000; CEFIC directives, 1993). The information is not presented in a neutral way.

In general, the causes for the risk that the quantitative information in environmental report is not reliable can be divided into two types:

- a) environmental records do not reflect actual environmental performance;
- b) information in the environmental report does not comply with the environmental records.

These potential causes for risks will be discussed in greater detail below.

a) environmental records do not reflect actual environmental performance

Causes for risks related to the reliability of the accounting records again can be divided into two stages:

- (a1) errors in data gathering and;
- (a2) errors in data processing (from data to information).

(a1) Errors in data gathering

The quantitative information in the environmental report can be obtained in different ways:

- Measurements;
- Calculations;
- Estimates.

Measurements can be performed using different techniques and with different frequencies, each resulting in a different accuracy. When measurements are performed in general a distinction is made between continuous and discontinuous measurements. It is important that the samples taken are representative of the actual situation. Major causes of errors may include:

1. Not all environmental impacts are identified by the company's risk analysis;
2. Not all emissions points are identified;
3. Places where the samples are taken are not representative for the environmental effect.

Emissions occur at many points in the production facility. Not at all of these emission points can be measured. The company has to select the most representative places and estimate the other emissions (diffuse emissions);

4. The method that is used is not adequate for the purpose of the measurement. Measurements can be performed using a variety of methods and techniques.
5. The frequency of measurements is not adequate to obtain a representative sample. The frequency of measurement will depend on the kind of environmental effect that is measured, its relevance and its variance in occurrence. Also the kind of process (continuously or not) will affect the frequency;
6. The samples taken are not analysed in an adequate way using the appropriate methods and techniques;
7. The concentration results are not multiplied by the appropriate amount. The environmental effects that are measured are concentrations in certain streams. In order to calculate the emission per year they have to be multiplied by the stream concerned. In addition, errors may occur in the measurement of these streams.

Measurements are not always technically or economically possible. Such environmental effects are calculated or estimated. Diffuse emissions in particular are estimated, as are emissions resulting from incidents. Different (scientific) calculation models are available for calculating environmental effects. Errors may occur because the model is not suitable for the situation or because the different assumptions underlying these models are not in conformity with the actual situation at the organisation.

In order to reduce the risks of errors in the data gathering process certain internal controls may be implemented. These may include:

- segregation of duties between the person responsible for the environmental effects, the person who controls the measurements, the person who performs the measurements and the person who documents the registrations in the environmental records. If the person who is responsible for the environmental effects and therefore has to account for these environmental effects is also in charge of the measurements and where applicable the necessary adjustments, such an officer may make adjustments to bias the results in a positive way and these will therefore not be justified;
- description of responsibilities, tasks, authorities and functions;
- working instructions;
- sufficient education of personnel;
- measurement plans that are based on accuracy calculations in order to determine a representative sample.
The measurement plan includes the places where measurements have to be performed, their frequency and the measurement method;
- calibration of measurement equipment;
- adequate document design which allows proper registration (date, reference to other documents on behalf of the audit trail, number of the registration);
- procedures in relation to sampling and chemical analysis

- identifiable samples;
- procedures for adjustments, which allow only adjustments that are authorised;
- plans for the analyses of samples;
- checks on primary registrations;
- procedures for handling waste;
- procedures for waste storage ;
- weighing procedures;
- protocols of destruction of waste;
- registration of waste in stock;
- analytical procedures such as comparisons in time.

Not all data are measured. Some data are obtained using calculations or estimates. Mass balances can be made for some substances or even processes. In general, a distinction can be made between the following kinds of substances:

- there is a reasonably strong relation between the input and output; the relationship is subject to tight tolerances.
The reconciliation between the consumption of raw materials and consumables and the production of waste will never be perfect: conversion factors in the production process may vary slightly depending on circumstances. Temperature, humidity and the like can result in discrepancies. Although it may be impossible to detect small, accidental emissions, the reconciliation would disclose all significant discrepancies.
- there is only a weak relationship between the production of desirable goods and the use of certain raw materials or consumables, which may be environmentally hazardous. In those situations other procedures become more important.

(a2) Errors in data processing

Errors may occur because the primary records may not have been completely entered in the environmental information system, may not have been accurately entered in the environmental information system or may not have been entered in time. Further errors may occur because the software used to file the data is inaccurate or incomplete. Errors can be intentional or unintentional.

In order to reduce the risks of errors in the data gathering process certain internal controls may be implemented. These may include:

- precalculations before entering the data;
- square calculations;
- testing of software;
- physical safeguarding of the hardware, software and the files, for example access security, back-ups.

b) information in the environmental report does not comply with the environmental records

There is a risk that the information available internally may not be presented completely or accurately externally. Also, there is a risk that the way in which information is presented will be biased. The attitude of management is important.

6.4 Points of attention, experience from practice

Examples of risks of potential misstatements in environmental reports identified in practice were also collected. This was done by means of interviews with an EMAS-verifier.

Example of risks identified during EMAS-verifications include the following:

1. Lack of internal control on the quantitative data included in the environmental report.

The risk of potential misstatements was mainly due to the fact that no internal check was carried out within the company between financial data and environmental data. In the production location of the company, the head of the technical service department is responsible for the collection and disposal of waste. He also maintains contacts with an external company for waste disposal. He files the data concerning the kind of waste and the quantity of waste (based on receipts and weight slips) in an Excel file. An employee of the accounting department processes the invoices of the waste disposal company. He has these invoices checked by the head of the technical department. The data of the accounting department are used for the environmental report. During the audit of the environmental report, major differences were found between the total amounts of waste in the environmental records and those from the Excel file that was kept by the head of the technical department. The company did not carry out a comparison between both files. The fact that the accounting department did not identify all underlying documents for the invoices of the waste disposal company was the reason for the differences. For instance in one case the invoice referred to the waste disposal of five barrels of hazardous waste with a content of 200 litres. The bookkeeper assumed that the barrels were completely filled and therefore counted 1,000 litres. In fact, these barrels only contained 50 litres. The file of the head of the technical department therefore showed only 250 litres;

2. Lack of a clear description of the environmental information system in relation to data on emissions to air.

At the chemicals company concerned, every department counts its own emissions to air (by either measurements, calculation or estimation). These data are then sent to a central point where the data are consolidated. During the audit of the environmental report, it emerged that both at the central level and local level adjustments were made in the data. Although they may have been justifiable, they frustrated the audit trail from basic source data to the data in the environmental report. There were no procedures for the data collection and for filing the necessary adjustments. Also, there was no structured internal control on these data.

3. Lack of calculations to assess the accuracy of measurements.

The measurement of low concentrations of polluting components in air or wastewater streams has progressed considerably during the past few years. Certain hazardous

components such as mercury or dioxin can be measured in very low concentrations. A major mistake that is regularly made is the multiplication of these small concentrations with the enormous quantities (of streams) in which they are measured in order to calculate the emission per day or per year. The numbers calculated in this way are very inaccurate (errors of 200-500% are possible). Unfortunately, once they are published they are interpreted by readers of the environmental report as 'the truth'. During the audits of environmental reports, the EMAS verifier noticed that accuracy calculations and the possible error are not explained. The absolute error can be measured in accuracy calculations. Next, the relative error can be measured. For instance, if on a length of one meter, the absolute error is + or – one centimetre, then the relative error is 1%. Measurements are made in 1/1000 mg (nanogram/m³) for example, a certain amount of air with certain humidity at a certain temperature. The measurements are multiplied by the streams in which they were measured. However errors may occur in the amount of these often very large quantities. Such streams may have an irregular course. The more variances, the more measurements in a certain period are necessary in order to identify the spread and therefore to determine how often measurements are necessary to obtain representative data. In order to prevent a wrong interpretation of the environmental report therefore an explanation of the quantitative data is necessary, including an estimate of the inaccuracies. The EMAS verifier several times experienced wrong interpretations of quantitative data in court cases. Certain errors are inherent in the method of measurement. The greater the number of consolidation steps, the greater the error can be. In general, technical staff makes the adjustments in the errors. For instance, a dioxin measurement is very expensive. It is mandatory only twice a year. Twice a year however is not sufficient to calculate statistically acceptable data. However, there are still no procedures for adjustments and procedures for evaluating the acceptability of these adjustments ;

4. Differences between the financial statements and the environmental report.

During the EMAS verification of a major waste disposal company the compliance of the data on the processed amounts of waste, the disposed amounts of residual waste and the energy use as reported in the financial statements (recalculated from the figures disclosed) with the data as reported in the environmental report was examined. Major differences were found. The main reason for these differences were the adjustments made in the data in the environmental report after the closing of the reporting year and the differences in definitions used for certain accounts. Again, the adjustments were reasonable, but were not filed and the audit trail was difficult to trace. Internal control should have identified these differences at an earlier stage;

5. Differences in relation to the permits.

A production location uses cooling water , which is disposed to the surface water. The disposal permit sets an annual maximum for certain chemicals . The environmental report states that the quantities allowed have not been exceeded. The audit of the environmental report revealed that the company had changed the kind of chemicals during the reporting year without notifying the authorities. These other chemicals used were formally therefore not permitted. The statement accordingly provides an inaccurate picture.

6.5 Case study

The description of this case study³⁴ provides the basis for the verbal protocol analysis. Due to the complexity of the process, a real case was chosen for this verbal protocol analysis. None of the research subjects were involved in any way in this company.

6.5.1 Research method

By means of document analysis and interviews with internal stakeholders, data were collected to describe the process of data collection and processing to compile the environmental report. The company where the research took place was selected using the following criteria:

- the company has an operational environmental management system, whose structure is similar to that of other companies (ISO 14001 certified);
- the company has an internal control system that is sufficient for the provision of reliable external financial information (unqualified opinion on the financial statements);
- the company is motivated and is willing to co-operate with the researcher
- none of the research subjects for the verbal protocol analysis is involved in any way in this company.

Based on these criteria the site of a chemicals multinational in the Netherlands was chosen.

The selected internal stakeholders at the site are:

- site manager;
- plant manager;
- head of the department of Quality, Health, Safety and Environment;
- accounting-manager Business Unit Salt;
- environmental co-ordinator;
- quality manager (also member of the Works Council);
- chairman of the Works Council;
- head of the laboratory;
- the accountant in charge of the QHSE information system;
- the assistant plant manager; and
- the waste manager.

Other selected internal stakeholders are:

- corporate director, environmental and safety affairs;
- corporate director of the internal auditing department;
- co-ordinator HSE-audits;
- business Unit Manager, Base Chemicals;

³⁴The case study is published in more detail in Kamp-Roelands, A.E.M. and J.J. Bouma (1998a)

- controller Business Unit, Base Chemicals;
- manager of Safety Health Environment and Regulatory Affairs - Chemicals group.

Limitations in scope

The research describes the process of environmental data gathering, processing and reporting within the environmental management system of only one site of a multinational company. The site, however, is regarded as pro-active and it is expected that other sites will follow their example. The data were collected during 1997. An environmental management system is a dynamic system and changes over time. Certain internal control measures might have been implemented in the mean time. A check on the existence and effectiveness of the internal control measures that were mentioned during interviews or found within documents was not part of the research.

6.5.2 Background of the company selected

The headquarters of this multinational in the chemicals industry is located in the Netherlands. The company operates in more than 60 countries and has approximately 69,000 employees. The company has four different divisions: chemicals, fibres, coating and pharmaceuticals. Every division has several Business Units (BU), for example for chemicals: BU Base Chemicals and BU Functional Chemicals. The BU-management includes amongst others a BU-manager, a manufacturing manager and a controller. The BU-management is supported by several staff departments, including the department Safety Health Environmental and Regulatory Affairs (SHERA). The Business Unit has several production facilities that are the responsibility of plant managers.

The company has a corporate environmental policy and produces a corporate environmental report. The corporate environmental policy explicitly refers to open internal and external communication in relation to Health, Safety and the Environment. The corporate environmental policy also includes quantitative targets for certain global environmental effects. In addition, a BU may set certain targets on an ad hoc basis. Due to specific permits for each site or each production facility, every site has its own environmental policy that complies with the corporate environmental policy, but includes more specific environmental targets and time frames for the implementation of environmental measures.

In 1986, the company initiated the implementation of Total Quality Management, which includes environmental care. Since 1992, an environmental management system is in place at all production facilities. Since the end of 1996, the environmental management systems of the production facilities have been in with ISO 14001. The BU staff department SHERA has developed a master plan for the implementation of ISO 14001 environmental management systems.

In consultation with the corporate environmental director and the director of internal auditing services, a site with several production facilities was chosen. The selected site has 250-500 employees. The site is located in the Netherlands and produces chlorine gas. The site seeks to

establish a dialogue with its stakeholders by holding regular meetings with different stakeholders and publishing an environmental report and other environmental information. The corporate directors interviewed with perceived this site, in relation to environmental issues, as the most pro-active one within their company. The site has a site manager, several plant managers and a staff department that assists the plant managers. The staff department includes a head of the department Quality, Health, Safety and Environment (QHSE) assisted by an environmental co-ordinator and a QHSE accountant (with a financial background). During the case study, the environmental management systems of the production facilities on the site were ISO 14001 certified.

The staff department QHSE supports the site manager and the plant managers in developing the environmental policy, in contacts with governmental institutions and other external stakeholders (or stakeholder groups) and the provision of internal and external environmental information.

At the time of the research, the site was in the process of re-designing its environmental information system. The head of the department QHSE of the site gave the following reasons:

- an enormous amount of data was located all over the company;
- the tasks and responsibilities in relation to data generation and collation were not always clear;
- the need for information increased both in diversity and in quantity;
- the information generation and collation process is not well structured; and
- limited control over how environmental questions were answered. These questions could be directed to anyone within the organisation and be answered by anyone.

The accounting manager of one the BU's who was located at the site was also an environmental accountant³⁵. During the process of redesigning the environmental information system, he worked closely with the head of the department QHSE.

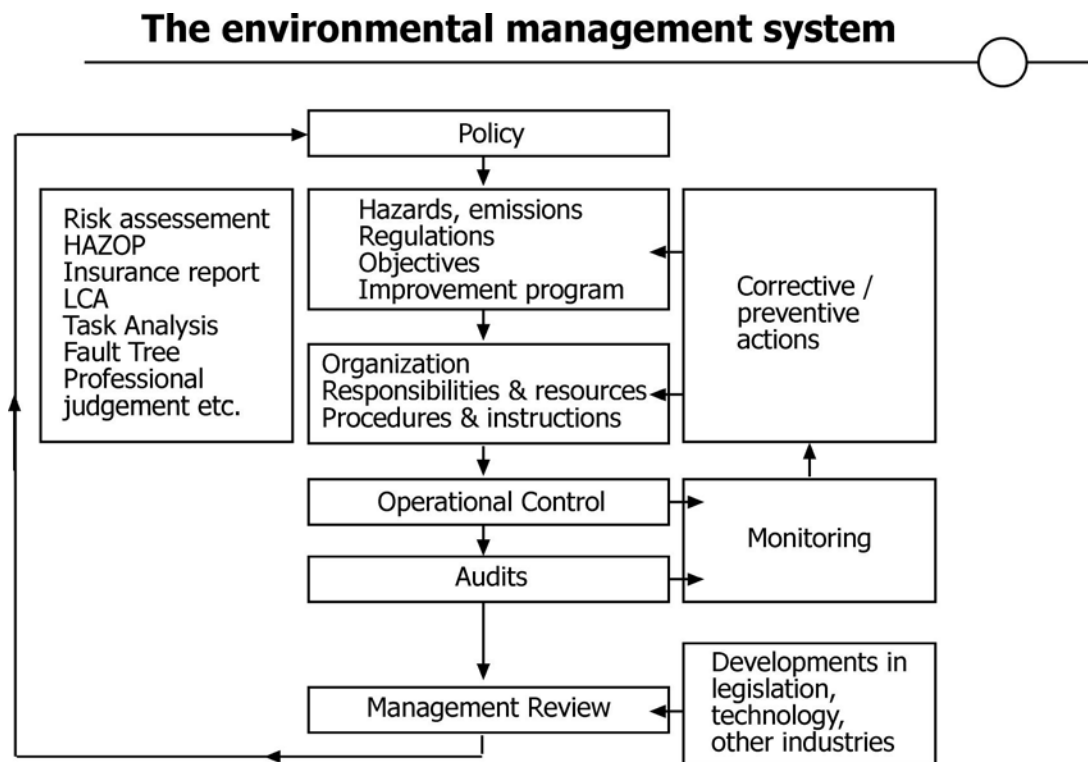
6.5.3 The environmental management system

The environmental management system is designed according to ISO 14001. At group level, a staff department has made a master plan for setting up and documenting the environmental management system. Consequently, all sites set up their environmental management system in a similar way. The process of collating environmental data and reporting environmental information however is not described in the master plan.

Figure 6.2 provides an overview of the structure of the environmental management systems as implemented by the chemicals company.

³⁵ An environmental accountant is a certified accountant who has obtained a post graduate qualification in environmental accountancy. In the Netherlands this post graduate education course includes all kinds of environmental issues in relation to the domain of accountancy.

Figure 6.2



Source: company's internal document

Control environment

On the site, the plant managers turn much of the environmental responsibilities over to the staff department QHSE, including the responsibility for internal and external communication. The initiative to implement and further improve the environmental information system came from the head of the department of QHSE. Of importance, however, is the fact that responsible line managers receive from the corporate management (the tone at the top) the commitment to fulfil the stakeholder needs in terms of environmental information. This will increase the commitment of line managers to implement internal control measures to enhance the quality of environmental information.

Despite the ISO 14001 structure of the environmental management system not all responsibilities, authorities and tasks are defined and documented. Especially those relating to the environmental information system are lacking. The interviews showed that the competence and the commitment of the employees increase the confidence of the company's management. Education and training are also perceived to be very important. There is a relationship between environmental care and employment. The continuity of the company is partly determined by the acceptance of the environmental effects and risks. Further, there is a close relationship between safety and environment. Many measures implemented to increase the safety of employees also contribute to the control of environmental effects.

Risk analysis

At the present moment, the government prescribes many environmental measures. Receiving a permit, which mainly prescribes the maximum allowed emission levels, will give the company more responsibilities. Therefore the risk analysis will become more important in the future. The company draws up an inventory of the environmental aspects of its activities, products or services. However, this is merely an initial risk assessment that is only adapted when changes in activities, products or services occur. The risk assessment is used as basis for setting environmental objectives. The risks in relation to the environmental information system are not assessed.

Internal control activities

The handbook of the ISO 14001 environmental management systems of the plants does not describe the process of data gathering, collation and reporting. As a result the internal control measures that are taken in relation to the data gathering, collation and reporting process were insufficient for the supply of reliable and clear environmental information. A probable cause may be found in the ISO 14001 standard itself. As regards the provision of reliable information, ISO 14001 places emphasis on the reliability of measurement itself. An example of the lack of internal control measures is the lack of explicit attention for segregation of duties. Plant managers, who receive a reward for environmental performance, can also influence the environmental data, which might bias these data. Segregation of duties in financial management systems is a basic requirement to secure reliable information. Due to a difference in the necessary expertise and the implementation of tasks relating to the environment within existing tasks, some segregation of duties was present.

The internal control measures that had been taken so far were mainly related to the measurement of emissions and the analysis of samples in the laboratory. In addition, to safeguard the reliability of the internal report produced on a quarterly basis and the annual environmental report, analytical procedures (comparison of data over time) were performed. Further, it emerged that the process of data gathering and collation is not well documented. By documenting the whole process and related responsibilities and tasks the company will prevent any loss of knowledge when a responsible employee leaves the organisation.

Information and communication

The company has a corporate environmental policy for an open internal and external communication in relation to Health, Safety and Environment. A corporate environmental report is produced, but there is no dialogue with stakeholders to confirm whether the corporate environmental report fulfils their needs. At site level, however, the policy for an open communication resulted, amongst other things, in an environmental report and stakeholder dialogue by means of regular meetings. On the site level there no inventory was made with regard to the stakeholders' required quality of information. The environmental information system is being redesigned to ensure a more structured process of data gathering and collation that fulfils stakeholders' needs. An inventory is prepared of the external, internal environmental information needs, and how they relate to the kind of information that needs to be collected in order to fulfil these information needs. At the present moment, a spreadsheet is

used to file the data. Data received from the plants and from the laboratory is entered manually. The environmental information system has no links with any other information systems within the company (e.g. the laboratory information system, the process information system, and the waste information system). Plant managers allocate the assignments in relation to measurements and analysis. Plant managers and process engineers can, in consultation with the head of the laboratory, modify the results. The current environmental information system provides the information to governmental institutions and in response to internal needs on a tactical level. In addition, it provides the data for the site and corporate environmental report. The governmental institutions are still regarded as the main external stakeholders.

The case study notes that the company expends significant efforts on the further development of the environmental information system as part of the environmental management system. The environmental manager perceives the contribution from the business unit accounting manager as very important. At the site, the co-operation between employees with a technical background and an accounting background has led to further improvements of the environmental information system.

Monitoring

Environmental effects are monitored in accordance with the permit (some continuously). Overrunning the maximum emissions (e.g. per day) has to be reported immediately to the local authorities. Once every quarter the management team of the site discusses the environmental performance and the progress in the implementation of environmental measures.

The internal environmental management system audits and complaints (internal and external) also provide evidence on the malfunctioning of certain environmental measures. The internal audit department together with the corporate environmental director co-ordinates the environmental audits of the environmental management system. At least once every five years an audit is performed at the site. The audit approach is developed on a corporate level with advice from environmental consultants. A multidisciplinary team performs the audit. The company has a pool of auditors. The auditors concerned perform the audits only occasionally. The rest of the time they have other responsibilities within the company.

The description of the environmental management system reveals certain risks regarding the reliability of information. These include:

- reliable environmental information is not one of the company's explicit objectives;
- there is no risk analysis relating to reliable environmental information;
- the environmental information system is not documented;
- simple information technology (use of spreadsheets);
- no links between the environmental information system and other information systems;
- no corporate procedures for data gathering, processing and reporting;
- manual entry of the data without checks;
- no checks on the reliability of the spreadsheets;
- no segregation of duties between the responsibility for environmental effects and the control of measurements.

6.6 Results of the verbal protocol analysis

In this paragraph, the results of the verbal protocol analysis are discussed. The research subjects were thinking aloud on the case study as described in the previous paragraph.

6.6.1 Research method

6.6.1.1 Research process

The research subjects comprised 10 persons with either an environmental consulting or an (environmental) accountancy background. Only experienced people were selected, because the purpose of this study was to identify the elements that are of importance and relations between them. The study is not intended to identify differences between experienced and inexperienced auditors (as is quite often the case in existing literature). The experience is only relative, because environmental reports have been audited in the Netherlands only since 1994. At the time of the design of the research (1997), 23 environmental reports were audited in the Netherlands, of which nine were EMAS validations and 14 concerned corporate/site environmental reports. While 14 environmental reports included an audit report, some of these concerned compilation engagements. The number of experts is therefore small. In addition, experience in auditing environmental reports is only minor. The differences between accountants and other professionals could be of interest. Personal and other characteristics are therefore identified in advance of the 'verbal protocol analysis'. These questions were asked before the verbal protocol analysis. Each research subject received an oral instruction on the 'verbal protocol analysis'.

The thinking aloud session of each of the research subjects was taped on two recorders. The thinking aloud sessions took place at the end of 1997 and the beginning of 1998.

The research was pilot-tested using two experts. The comments received were that the information received was quite voluminous and it was suggested to hand out the information in advance of the verbal protocol analysis. Doing so, however, provides no insight into the way the data are used. Therefore I decided to make a summary of the contents for the larger sections.

6.6.1.2 Task

The research subjects were told that the purpose of the conversation/verbal protocol analysis was to gain an insight into the various aspects that are important for professional judgement on the reliability of the environmental information system. In addition, it was stated that the researcher had no relations with any audit firm or management consultancy firm.

The experts were told that in October 1996 they received the engagement to audit the 1996 environmental report of a chemicals company. It was for the first time that the company issued such an engagement. The subject matter of the audit of the environmental report was

restricted to the quantitative data only. Further, the time available to audit the quantitative data included in the environmental report was restricted to 10 man-days.

The 10 experts were given the task to answer aloud the following questions:

1. What are the (potential) risks that may cause the environmental report to provide an inaccurate/incomplete reflection of environmental performance and therefore require special attention during the planning of the audit procedures?
2. To what extent are the environmental information system and the related internal controls sufficient as a basis for the provision of reliable information?

Because there was a risk of misinterpretation of terms, the following pragmatic definitions were used:

- Environmental information system: the measures taken in relation to the systematic collection, classification, registration and processing of data for providing information.
- Internal control: procedures and measures established by management and focused on the accuracy, completeness and timeliness of information.
- Reliable: an accurate and complete reflection of environmental performance reported in the correct period.

The experts had one hour to think aloud on the answers to the two questions. The experts received much information that might be relevant to their evaluation. The experts were told that they had to be very selective in their choice and that it was not the intention to read the whole file first. In order to answer the research question the choice of information was also important.

The information was filed by topic. The content included descriptive information, graphs, and tables. The information by topic varied from half a page to five pages. A summary preceded each topic. The risks identified in the previous paragraph were included in the description. Information was given the environmental policy, environmental management, the environmental information system and related internal controls and environmental performance and other matters. A full overview can be found in Annex 6.1.

6.6.1.3 Background of the research subjects

As stated above, experienced auditors were used for the verbal protocol analysis. The 10 research subjects all came from the Big 5 audit firms, eight of them were environmental consultants, while the other two were accountants. Table 6.3 provides an overview of the background of the research subjects. With only 21 environmental reports being audited, of which nine related to EMAS verifications, they represented the majority of the experts in the Netherlands involved in the audit of environmental reports. None of the research subjects was involved in any way in the company that was used as a basis for the verbal protocol analysis.

Table 6.3 - Background of the research subjects

	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
Education:	University Science of social administration	University Biology; ISO lead auditor course	NIVRA Accountancy	University Biology; MBA Business administration; ISO lead-auditor course	University Chemistry	University Business administration, accountancy, MBA environmentology	University Environmental protection, course business administration, safety courses	Secondary education chemicals technology, courses safety; environment; ISO lead auditor course	University Biology	Secondary education chemical technology; courses in chemical processes; ISO lead auditor course
Years of experience:										
- Audit of ER	1-2	2-4	1-2	2-4	2-4	2-4	2-4	2-4	1-2	2-4
- Advice EMS/ER	4-8	>12	1-2	4-8	>12	8-12	8-12	8-12	4-8	>12
- Certification EMS	1-2	-	-	1-2	*	-	-	2-4**	1-2	2-4
- Financial audit	-	-	>12	-	2-4	>12	-	-	-	-
Industry Clients (audit of ER)	1 client Bank	2 clients Chemicals, Oil and gas	1 client Chemicals	2 clients Building, Waste	3 clients Oil and gas, Chemicals, Bank	10 clients Chemicals, Waste	3 clients Oil and gas	15 clients (8 in Germany) Waste, Chemicals, Nutrition, Metal, Automobile	5 clients Waste Nutrition Metal	2 clients Chemicals
Employer	KPMG Environment	KPMG Environment	KPMG	E&Y Environment	KPMG Environment	Deloitte & Touche	KPMG Environment	KPMG Certification	KPMG Certification	KPMG Certification
Function	Senior	Senior	Senior	Senior	Director	Director	Senior	Lead	Senior	Senior

* does not perform certifications, but was involved in the design of the certification approach

** 50 clients

6.6.1.4 Transcription

The audiotapes were transcribed by breaking the verbalisations down into short phrases using the following operators:

- Information gathering: assigned when the subject gathers information either from an internal or external source. Information gathering is further divided into:
 - Reading (R): assigned when the subject reads information directly from the case or gives a summary of what was read. The information is obtained from an external source;
 - Information retrieval (IR): assigned when the subject obtains information from an internal source (memory);
 - Evaluation: assigned when the subject thinks about certain alternatives or possibilities based on the information obtained. Evaluation is further divided into:
 - Evaluation questions (E/EQ): assigned when questions were raised during the evaluation process;
 - Evaluation/information retrieval (E/IR): assigned when the evaluation is based on information from memory;
 - Assumption (AS): assumptions that are made during the evaluation process;
 - Evaluation sec (E): assigned when non of the above situations was applicable;
 - Judgement: assigned when the subject reaches a conclusion, predictive or definite. Judgement is further divided into:
 - Conditional judgement (CJ): Assigned when a subject draws a conclusion (prediction) which is speculative or predictive in nature. Some degree of uncertainty is present. (E.g. “I think that” Or “If..then.. therefore...”)
 - Conditional judgement/retrieval from memory (CJ/IR): Assigned when information obtained from memory is used for a conditional judgement.
 - Conclusion (C): assigned when a subject reaches a definite decision concerning the specific audit task.
 - Action: assigned when a subject describes certain actions they will take during the audit.
 - Action is further divided into:
 - Advice (A): assigned when the subject describes certain advice they will give to the company in relation to the existing situation;
 - Action to be taken in the case (DA): assigned when the subject describes actions they will take during the process of thinking aloud in relation to data gathering, e.g. going to look at section B;
 - Action to take during the audit (DAA): assigned when the subject describes audit procedures they will perform during the audit of the environmental report;
- Other:
 - Questions (Q): assigned when the subject raises questions during the process of thinking aloud. These were questions on where certain information could be found and if certain information was available in the description.

In addition, cues (rules of thumb) that were used during the whole thinking aloud process were identified.

The operators were assigned to the short phrases of the verbal protocol. This provided an insight into the structure of the judgement process. Next, the text was sorted. This provided an insight into the number of words that were used for each stage in the decision making process.

Table 6.4 provides some examples of the operators.

Table 6.4 – Examples of operators

<i>Information gathering</i>	
R	In this group, there is an employee with an accounting background.
IR	Discharges to water are often measured at the exit of the company.
<i>Evaluation</i>	
E/EQ	To what extent were there complaints? What was their reaction to complaints?
E/IR	It is possible that you work with very hazardous substances and that you have to set a very high tolerance while from the point of view of environmental information provision the fact that there is an improvement is sufficient. Whether it is 8% or 10% is not material.
AS	I assume that it is the same laboratory that performs this task.
E	What is strange is that the environmental information system is not linked to the other information systems.
<i>Judgement</i>	
CJ	If there are deviations then the cause could be the process, but there could also be measurement problems.
CJ/IR	If they have no such insight, they are still a normal company. This is not unusual for the industry.
C	There is a risk that the environmental information system is not sufficient.
<i>Action</i>	
A	I would advise the company to involve the public relations department.
DA	I am going to read their environmental policy.
DAA	Based on this information I will perform interviews with the people who collect the data.
<i>Other</i>	
Q	Do you have information on the environmental information system in relation to waste?

The verbal protocol differs in terms of the number of words. This relates in part to the personal characteristics of the persons involved. Some like to talk more than others. However, it more experienced persons were perceived to talk more than less experienced persons. In one case, the low number of words was partially caused by the fact that the subject was an English native speaker who is also familiar with the Dutch language. In one instance, it was caused by an unpleasant external conversation just before the verbal protocol took place (subject 9). Since the main objective of the verbal protocol analysis was to identify all possible risks that were taken into consideration, the knowledge that was used to do this and the resulting audit procedures, and the aim was not to compare the results of auditors, I decided to include all verbal protocols.

Because time spent on different topics included in the information file is not necessarily an indicator of its importance (for instance a section may be short, but very important in the evaluation), subjects were asked to fill in a questionnaire following the verbal protocol.

Limitations of the research

While the task was based on an actual situation, it was restricted to only one situation. Thus, it is difficult to know to what extent the same findings would be obtained with another task. While the case was lengthy, it does not duplicate the complexity of actual audit situations. Thus, while some of the complex trade-offs between different audit procedures were observed, actual auditing situations might involve others. It is not possible to know how this limitation might have affected the judgements made by the auditor. Verbal protocol methods may not capture all of the subject's decision processes. In addition, there is an element of subjectivity in the content analysis of the protocols. These effects were minimised by establishing coding rules before analysing the protocols. The latter allowed the measurement of agreement and reconciliation of differences.

6.6.2 Research results

The auditors, except one, did not use the planning structure proposed by ISA. The one exception was an accountant with only limited experience in auditing environmental reports. In general, no distinction was made between the inherent risks and the control risks. Sometimes, the environmental risks were mixed up with the information risks. However, an environmental risk does not have to be an information risk. Due to environmental risks, the information may become more material. Although no question targeted the kind of audit procedures that would have been performed after this risk analysis, all research subjects described the procedures they would perform based on the information in the case study.

6.6.2.1 Decision behaviour

Tables 6.5 and 6.6 show the results of the transcription of the verbal protocols. In general the largest numbers of words were used to describe the evaluation (35%) and action (29%), especially the audit procedures that would be performed during the actual audit. Although quite some time was spent on information gathering, this is not reflected in the number of words (only 16%). The reason is that most subjects do not speak while reading. Only two subjects (subject 4 and 7) summarised what they were reading.

There were differences in the decision behaviour. Some participants followed the order in the information map given to them. They commented on each section, tried to identify risks, and described the audit procedures that would be performed. The more experienced auditors, based on their knowledge, first gave a general picture of various aspects that need to be assessed and the potential risks that can be identified. Next, they went into more detail by

reading and commenting on the contents of the information map given to them. In general, the following approach (per section) was used:

- reading;
- information retrieval from memory;
- evaluation;
- search for additional information;
- evaluation;
- description of risk;
- audit procedures.

During the thinking aloud process subjects quite often immediately described the audit procedures without identifying the risks. This implies that the thinking aloud process did not detect all implicit risk assessments made. It may also imply that the procedures that the subjects propose to perform may have been those that are performed during each audit. They may not be the most effective ones for this audit. Some commented that it was quite difficult because most decisions are made during the audit itself. Based on interviews, the next step to be taken is decided. As one of the research subjects commented:

“Planning is performed using an organisation graph and process chart. During the planning stage, it is decided who to interview. The environmental permit is used to decide what are the most urgent requirements and they receive the most attention. Restriction often to existing monitoring. Based on interviews an insight in existing procedures/documents is then gained. The planning stage is much more limited in comparison to the planning of the audit of financial statements. The persons spoken with and documents seen give an insight into the reliability”.

Subjects 5, 6, 8 and 10 mentioned the greatest amount of risks. These are also the persons with the most experience, and they used the most information from memory. The number of words spent on cues seems to relate to the subjects that were not afraid to take risks, however when they are expressed in terms of the total number of words used this relationship disappears. The differences in decision behaviour show that the planning process is still very unstructured.

Table 6.5 - Number of words during each stage

	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
<i>Information gathering</i>										
Reading	407	316	423	615	182	338	781	210	190	216
Information retrieval	266	108	58	220	528	1583	97	444	8	866
<i>Evaluation</i>										
Evaluation	970	925	1213	1978	1026	2147	1303	524	345	1298
Evaluation/retrieval from memory	29	39	98	520	0	609	328	278	89	118
Evaluation of questions	19	241	154	760	394	61	141	132	156	513
Assumption	69	0	41	324	46	68	0	43	0	114
<i>Judgement</i>										
Conditional judgement	105	300	544	476	394	275	380	18	83	373
CJ / retrieval from memory	0	0	0	44	0	43	61	0	0	0
Conclusion	613	285	1042	300	1119	1490	90	304	73	884
<i>Action</i>										
Advice	107	0	39	74	0	0	0	39	0	0
Action to be taken in the case	33	80	46	86	47	25	271	0	44	37
Action to be taken during the audit	1033	232	1676	2958	1296	1241	2680	600	135	969
Questions raised	79	123	0	205	51	26	19	14	23	73
Total	3730	2649	5334	8560	5093	7906	6151	2606	1146	5461
Information retrieval in total	295 (7.9%)	147 (5.5%)	156 (2.9%)	784 (9.2%)	528 (10.3%)	2235 (28.3%)	486 (7.9%)	722 (27.7%)	97 (8.5%)	984 (18%)
Cues in total	0 (0%)	116 (4.4%)	124 (2.3%)	567 (6.7%)	15 (1%)	183 (2.3%)	113 (2.1%)	131 (5.0%)	0 (0%)	151 (2.8%)

Table 6.6 - Number of words during each stage summary

	Average	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
Information gathering	7856 (16%)	673 (18%)	424 (16%)	481 (9%)	835 (10%)	710 (14%)	1921 (24%)	878 (14%)	654 (25%)	198 (17%)	1082 (20%)
Evaluation	17113 (35%)	1087 (29%)	1205 (45%)	1506 (28%)	3582 (42%)	1466 (29%)	2885 (36%)	1772 (29%)	977 (37%)	590 (51%)	2043 (38%)
Judgement	9296 (19%)	718 (19%)	585 (22%)	1586 (30%)	820 (10%)	1513 (30%)	1808 (23%)	531 (9%)	322 (12%)	156 (14%)	1257 (23%)
Action	13748 (29%)	1173 (32%)	312 (12%)	1761 (33%)	3118 (36%)	1343 (26%)	1266 (16%)	2951 (48%)	639 (25%)	179 (16%)	1006 (18%)
Other	623 (1%)	79 (2%)	123 (5%)	0 (0%)	205 (2%)	61 (1%)	26 (1%)	19 (6%)	14 (1%)	23 (2%)	73 (1%)
Total	48636 (100%)	3730 (100%)	2649 (100%)	5334 (100%)	8560 (100%)	5093 (100%)	7906 (100%)	6151 (100%)	2606 (100%)	1146 (100%)	5461 (100%)

6.6.2.2 Data collected

The time spent on each section is not an indicator of the importance of the information included. Some very important information can be described in only a brief section while other information, for example on the organisational structure, may be less important but requires more space to describe. Therefore, I decided not to check the time spent on each section but to ask the subjects immediately after the thinking aloud process to fill in a question on the relative importance of the information given to them. The answers had to be given on a five-point Likert scale. Table 6.7 provides an overview of the perceived relative importance of the data available in the case study.

Because the information given to the subjects may not have been complete, the question was also raised whether any information was lacking that could have also been of importance for their professional judgement. Two consultants said that no information was lacking. The others would have liked to receive the following information:

- information on environmental licenses;
- benchmark results;
- a blueprint of the draft environmental report;
- the internal reporting standards and how the environmental policy is translated in reporting standards;
- an analysis of differences between the environmental programme agreed with the government and the actual performance;
- insight into the management's risks estimates;
- insight into any inventory of the needs of society;
- information on the kind of audit report the client wanted and some information on what the client expects from the auditor;
- an analysis of differences between the limits in the permit and the actual performance data;
- information on the relation between the process data and the environmental data;
- the kind of opinion the financial auditor had given;
- information on the insight that the company itself has into the value of the quantitative data;
- information on the flow and frequencies of the samples taken and a more detailed overview of the quantitative data round off of the data;
- information on the compliance with internal procedures and consistency between the various internal reports (hierarchical).

Table 6.7 -**The relative importance of the data, available in the case study, for their judgement**

	Relative importance	Not important	Not very important	Reasonably imp	Very important	Crucial
Information system	90%	-	-	-	5	5
Internal control measures in general	88%	-	-	-	6	4
Analysis of differences between the normative and the actual performance	86%	-	1	-	4	5
Built-in control measures in the environmental system	86%	-	-	-	7	3
Procedures for non-compliance	80%	-	1	1	5	3
Authorisations	78%	-	1	1	6	2
Registration of incidents	78%	-	2	2	3	3
Monitoring	78%	-	-	3	5	2
Risk analysis by management	76%	-	1	1	7	1
Communication system	76%	-	-	3	6	1
Segregation of duties	76%	-	-	4	4	2
Measurements on critical points	76%	-	1	2	5	2
Use of standardised methods of measurement	76%	-	-	2	8	-
Quantitative data on environmental performance	76%	-	2	1	4	3
Attitude of management towards the environment	72%	-	1	4	3	2
Knowledge, experience and integrity of management	72%	-	1	4	3	2
Delegation of authorities and responsibilities	72%	-	-	4	6	-
Statistical calculations of the number of measurements	70%	-	-	3	6	1
Use of standardised methods for estimations	70%	-	-	5	5	-
Organisational structure	68%	-	1	4	5	-
Pressure on the management	68%	1	1	4	1	3
Competence and commitment personnel	68%	-	1	4	5	-
Violations of laws and regulations	66%	1	1	4	2	2
Description of the location	62%	1	2	3	3	1
Use of STER-laboratories	62%	-	2	5	3	-
Audit of the EMS	62%	1	2	3	3	1
Overview of laws and regulations	60%	1	4	-	4	1
Description production process	58%	-	1	3	4	2
History of complaints	58%	1	4	2	1	2
Developments in the industry	50%	2	2	5	1	-
Environmental investments	50%	2	2	5	1	-
Other: Environmental licenses						1
Other: Benchmarking				1		

For the planning, the most important information was the information on the information system and on internal control. Of less importance was the information that related to the knowledge of the business and of the audit and certification of the environmental management system or of certain laboratory analyses. It is remarkable that the score for the audit of the environmental management system is so low.

6.6.2.3 Information retrieval

The kind of information that was retrieved from memory concerned:

- information on substances, government policy in relation to certain substances;
- ways of measurements, risks in measurements, calculation models, measurement equipment, accuracy of measurements and underlying assumptions, problems in the calculation of the annual emissions (concentration times streams), differences in reporting indicators;
- disposal of waste;
- environmental management system: purpose and procedures that may expected within the environmental management system;
- how information needs of stakeholders can be obtained;
- importance of the certification of the environmental management system for the audit of the environmental report;
- quality of laboratories;
- reporting of incidents and their influence on the emission data;
- reporting of exceeding emissions during the day (small incidents) and their influence on the emission data;
- influence on environmental effects on other places in the life cycle;
- experience with permits, consequences of a validated environmental programme; and
- procedures performed during an audit of the environmental management system.

Information was retrieved from memory during the information gathering process (65%), during the evaluation process (33%) and to some extent during the conditional judgement (2%). Information was most often retrieved by subject 6, followed by subject 8, 10 and next subject 4 and 5. These persons were also the most experienced persons in leading positions. The kind of information retrieved was mostly on environmental issues rather than on internal control. This suggests that environmental auditors are still quite inexperienced in matters relating to internal control and information risks. The information retrieved during the information gathering process concerned especially those topics that were designated as missing in the questionnaire filled in after the verbal protocol. Such information can however be obtained during an actual audit. Although information on some topics was included in the documentation, the subjects did not obtain this information but rather relied on their experience, e.g. with government policy and licensing and environmental management systems. The time pressure during which the subjects had to perform their judgements may have caused this. In practice however such time pressure exists as well. During the actual

audit, there is therefore also a possibility that owing to time pressures not all information will be obtained and that the auditor relies will rely previous experience. Further research in this area is necessary. The information retrieval during the evaluation process concerned especially experience from previous audit (with other clients). These situations may lead to audit risks since certain decisions on the kind of audit procedures that will be performed are not based on the knowledge of this client, but rather on past experience. However, more research is necessary into the extent to which auditors rely on previous experience in their judgements and to what extent this may bias their judgements and therefore increase the audit risk.

6.6.2.4 Evaluation

Most of the time was spent on the evaluation of information. During the evaluations, questions were raised which during the audit process were probably also asked during interviews to plan further audit procedures. Some answers to the questions could be found in the documentation that the subjects received. Other questions concerned questions that they would ask during their actual audit. None of the auditors tend to use probabilistic reasoning in the decision process, e.g. there is a probability of x% that A will occur, but rather they deal with uncertainty by considering the conditions under which a particular outcome would occur with certainty, e.g. A will occur, if conditions B, C and D are present.

Auditors made conditional judgements and assumptions during the reasoning process. In addition, certain rules of thumb were used, often based on experience. Quite often, these rules of thumb were used to shorten the audit procedures to be performed. Because the rules of thumb often are based on experience with other clients or information received from other auditors, this causes a detection risk. A situation that may have existed with other clients may not be applicable with this new client. Audit procedures therefore might be selected and be shortened based on wrong assumptions. Table 6.8 provides an overview of examples of rules of thumb used.

The conditional judgements and rules of thumb enabled the auditors to make decisions and evaluative judgements. The conditional judgements that were made during the verbal protocol often concern the lack of information available in the case study, so that certain assumptions were made in the judgement (if..then) or judgements made too. During the exploration stage of an actual audit those conditional judgements will be much fewer because the auditor him/herself collects the information and can ask for as much information as is necessary for the planning of the audit.

Table 6.8 – Examples of rules of thumb used during the planning of the audit of environmental reports

If the company has an accurate overview of the environmental risks then you also have a good way to assess whether the environmental report provides a good view of environmental effects.

If the internal controls are accurate then you have less work to do during the audit of the environmental report

If the maintenance systems of continuous measurements are good then the figures are reasonably reliable

If the data come from the laboratory they have been checked adequately and are reasonably reliable

The more often you measure the more reliable the outcome

Substances that are hazardous for the environment will have to be more reliable

If it is a STEK acknowledged company then you have to assume that they do their work because an independent party will monitor them again.

If you can identify an environmental management cycle it will give better guarantee on the functioning of the environmental management system

If the laboratory works according to fixed engagements and they have a certificate, this is in my opinion sufficient reason to assume that they perform their work in an acceptable way.

The more sources you bring together the greater the inaccuracy.

In principle every environmental issue has its own relevance for society and therefore fulfils an information need.

The measurements of air usually take place in the operator's room so you may expect the files on these data to be there.

The fact that there is a segregation of duties provides some guarantee that the methods of measurement are acceptable. If not then there are a number of risks.

The least you can expect from a company with an environmental report is that they have a permit that is up to date and that the company in principle is able to comply with the permit.

The more often they monitor the functioning of the environmental management system, the less we have to do.

People from the laboratory are accurate by nature.

Process engineers are used to shuffle figures quite easily and execute adjustments.

Influence of ISO 14001 certification

In the case study description, the environmental management system was not certified. After performing the thinking aloud, all subjects were asked to specify what would have been the influence of an ISO 14001 certificate on their professional judgement. A variety of answers were given. The two accountants involved in the process both had completely different opinions. One answered that it had no influence while the other perceived it as a sign that the company takes the environment seriously. This person would place more emphasis on substantive tests and even thought that in future, environmental consultants will be used less and that there will be more reliance on the ISO 14001 certificates. Two consultants answered that it would have no influence since the environmental information systems are not examined during an ISO 14001-certification audit. Three consultants indicated that it only has a limited influence. It helps to know that there is a complete environmental management system. In addition, the matrix of reference provides an easy entrance for the audit of the environmental report (whom to interview). In their opinion, a certificate means that a qualified independent auditor has qualified the system as adequate. This does not mean that the environmental information system is good, but it does provide a clear indication for them that measurements and registrations are at a sufficient level (requirement of the standard) and that the environmental management system is adequately documented.

For three environmental consultants the ISO 14001 certification would have a major influence on the planning of the audit procedures. The environmental management system has in this case already been examined, including the measurement and registration systems. It provides a reasonable guarantee for the compliance with internal procedures and guarantees for a systematic approach of environmental risks, environmental effects and environmental aspects. They would have concentrated the audit procedures more on testing the accuracy of the data on a sample basis.

Influence of a framework license

If a company in the Netherlands has an environmental management system that operates satisfactorily it may apply for a framework license. This framework license does not impose detailed requirements for the kind of environmental measures the company has to implement but rather focuses on the environmental targets that have to be achieved. The company can therefore implement those measures that best suit the environmental policy of the company. The company has to agree, however, an environmental policy plan with the authorities in which the different kinds of measures that will be taken are described.

Having a framework permit therefore may be an indication that the environmental management system operates satisfactorily and may influence the kind of procedures that will be performed. The question was raised whether it would have influenced the planning of audit procedures if the company has a framework license rather than a traditional license with detailed requirements and does not want to change this situation. The question to this answer was mixed. For five research subjects it would not have influenced the audit procedures to be performed since it does not say much about the reliability of the data. However, for five research subjects there would have been a certain influence. In their view, a license with detailed requirements indicates that the company is still in an early stage in dealing with

environmental risks, it has a defensive/reactive attitude. Probably, this will also influence the process of reporting. A pro-active company must have clearly documented control mechanisms to show the government that the company complies with laws and regulations. One research subject stated that for a company with the framework license he would have been more ‘severe’ on the information systems. Further, one research subject mentioned that the framework license provides limits and standards that can be used during the audit.

6.6.2.5 *Inherent and control risks identified*

In total, 19% of the words were spent on judgements, of which 7% was spent on conditional judgement and 12% was spent on judgement in which no uncertainty was present. However, not all of this time was spent on the description of inherent and control risk. Some judgements were also made on the descriptions in the case study such as conclusions in relation to requirements set for the environmental report or conclusions in relation to requirements of the environmental management system. Table 6.9 shows the risks that were identified during the verbal protocol. In Annex 6.2, the risks identified for each research subject are specified in more detail.

Table 6.9 - Kind of risks identified

	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
General risks, e.g. governmental policies and competition					x					
Industry-specific risks, e.g. hazardous substances under discussion	x	x		x						
Entity-specific risks, e.g. location, business process, environmental aspects, incidents	x				x					
Management risks, e.g. rewards, targets, attitude towards environment	x				x	x				x
Internal control risks in relation to segregation of duties		x		x	x	x				x
Internal control risks in relation to procedures		x		x				x	x	
Internal control risks in relation to measurements		x	x	x	x	x	x	x	x	x
Internal control risks in relation to analysis of measurement samples				x		x	x	x		x
Internal control risks in relation to data processing	x	x			x	x	x	x	x	x
Quality risks in relation to reporting			x		x	x			x	
Account specific risks		x	x	x		x		x		x

Most often risks were identified in obtaining the primary source data, such as for measurements and calculations. In line with the evidence found by Waller (1993), inherent and control risks were jointly assessed. The risks identified are risks on an entity level or an

account specific level, mostly risks regarding internal control. Some of the risks are environmental risks rather than information risks, e.g. located near the water. However, because of this environmental risk data may be biased in order to present a more optimistic view. Only a few risks in relation to management are identified. Apparently, the integrity of management is doubted less than in the audit of financial statements. However, more research is necessary. The research results show the variety in risk identification. Some differences in risks identified are also due to the level of detail of the risks, e.g. tolerances of measurements versus the temperature and pressure that influence the measurements. The inconsistencies between the auditors are indicative of the preliminary stage. The risks identified however were complementary. Risks that were identified several times concern:

- location (3);
- substances under discussion (3);
- segregation of duties (4);
- reliability of measurements (3);
- frequency of measurement (3); and
- no check on manual data input (4).

It was said that the fact that management does not use the information from the environmental information system may lead to negligence of the people who have to report. Another risk identified was, for instance, that because the process of environmental information is not described in the manual, this may lead to a lack of structured procedures and therefore to a lack of consistency in data collection, processing and reporting.

The fact that only the data of 1995 were subjected to audit may cause a risk that readers do not interpret this accurately on the basis of the audit report or do not understand the reason for this.

Several subjects mentioned the segregation of duties although they all highlighted different aspects. One noticed that only one person is responsible for all data within the system. Another subject noticed the concerns of the persons performing the measurements and calculations and the fact that the plant managers may have a say in the measurements. The knowledge of the people who perform the measurements was mentioned as a risk, because if the operators perform the measurements (which was possible in this case) then it may be questioned whether they have sufficient knowledge, a lack of which may cause technical errors and therefore errors in measurement results.

It was noted that incidents form a high inherent risk because the emissions during an incident may be higher than the yearly emission of diffuse points. Often they are not measured. One of the risks of the boundaries is for instance transport by third parties. Further, leases and contractors working on the site are causes that make the boundary of the reporting entity unclear. Although management is responsible for such emissions and can influence this, this is often not taken into account.

Emissions to air are difficult to control and to measure. The period between the audit of the EMS and the corrective actions was quite long and it was noted that this may imply that there is no monitoring on the compliance with procedures.

6.6.2.6 Knowledge used

Information of the knowledge used was obtained from the verbal protocols and from a question that was asked after the subject had performed the thinking aloud. They were asked what knowledge had been important in reaching their judgement. The answers were given in a five point Likertscale.

Table 6.10 shows the results of the question asked.

Table 6.10 - Relative importance of the knowledge of the subjects

	Relative importance	Not important	Not very important	Reasonably important	Very important	Crucial
(Environmental) audit techniques	86%	-	-	2	3	5
Environmental information system and internal controls	86%	-	-	1	5	4
Environmental effects of substances that are used in the production process and resulting waste	76%	-	1	2	5	2*
Measurement- and registration techniques	74%	-	1	2	6	1
Industry knowledge	65%	1	4	3	2	-
Technical knowledge of the kind of production process	64%	-	3	2	5	-
Environmental laws and regulations	58%	1	3	3	2	1
Other:						
Knowledge of ISO/EMAS				1		
Risk estimation						1
Reporting standards					1	
Examining data				1		
Organisational knowledge				1		
Knowledge of quality systems				1		

* evaluation of the data during the year

In addition, without referring to relative importance, competencies such as arithmetic insight, critical attitude and analytical competence were mentioned.

The knowledge of audit techniques and of environmental information systems internal controls was most important. As is apparent from the identification of the risks, the knowledge of the environmental information system is mostly focused on measurements and analysis. The results are consistent with the kind of information they want to obtain. Accountants acquire this knowledge in their education. Environmental consultants can obtain

this knowledge from a course in auditing and from practical experience. Not all subjects however have done this course and therefore their knowledge is based on practical experience only. Knowledge on environmental information systems and internal controls is not included in the course and therefore based only on experience.

Combinations of knowledge used during the verbal protocol that could be derived from the verbal protocols differ for each subject. The reason is that each subject focused on different perspectives of inherent risks and control risks. Knowledge that was used during the information retrieval was:

- knowledge of substances;
- knowledge of measurements;
- knowledge of the information process;
- knowledge of the environmental management system;
- knowledge of the business/industry;
- knowledge of internal audit;
- knowledge of accountancy audit approach during the planning;
- knowledge of audit reports;
- knowledge of stakeholder theory/how to meet their needs;
- knowledge of laboratories;
- knowledge of production processes;
- knowledge of permits.

Further experience with governments was used in the information retrieval. The results comply with the answers that were given by the research subjects in the questionnaire.

6.6.2.7 Action

The auditors also described the kind of audit procedures they would perform. The kind of procedures varied considerably. The only kind of audit procedures mentioned several times were:

- obtain more detailed knowledge of the nature of the business;
- obtain more detailed knowledge of the business processes and the environmental impacts related to those processes;
- evaluate the log files of measurement equipment and their calibration;
- evaluate the choice to report and measure on certain points;
- evaluate the procedure to adjust the source data;
- evaluate the acceptability of the adjustments made to the source data;
- evaluate the value of the environmental data to management;
- follow the audit trail for the main flows;
- evaluate the environmental management system;
- evaluate the incoming and outgoing flows of goods, including waste and emissions;

- evaluate whether the documentation of the environmental information system is adequate;
- evaluate the segregation of duties;
- assess the independence of the laboratory from the production facilities;
- check the accuracy of the data entries on a test basis; and
- evaluate the draft environmental report.

Tables 6.11, 6.12 and 6.13 provide an overview of all the audit procedures that were mentioned by the research subjects.

Table 6.11 - Knowledge of the business

Management and ownership-important characteristics
Obtain knowledge of and assess: <ul style="list-style-type: none"> - Organisational structure; - Environmental policy (2).
The company's business products, markets, suppliers, expenses, operations
Obtain knowledge of and assess: <ul style="list-style-type: none"> - Nature of the business (7); - Kind of processes (6); - Changes in business processes; - Environmental impact of the processes (6); - Environmental licenses and when they were issued and will expire; - Incoming and outgoing flows of goods, including waste and emissions (3); - Sensitivity of data to errors inherent in the kind of data and ways of obtaining them; - New products; - Changes in means of production; - Changes in measurement equipment; - Correspondence with authorities including the environmental inspection officers (2); - Special events such as shut down of the production process due to maintenance; - Incidents; - Complaints; - Fraud risk of certain substances and waste.

The information obtained was limited to the processes and the related substances used in those processes. None of the subjects indicated that information was needed on the environmental impacts of the products produced. Also there was no reference to obtaining knowledge of general environmental factors that may affect the company's operations, such as changes in environmental laws and regulations, changes in government policies in relation to environmental management and environmental licensing. Only one reference was made to identifying possible changes in environmental themes. Further, there was no reference to any industry specific conditions that may affect the company such as industry covenants, business risks and industry specific environmental impacts.

Table 6.12 - Internal control

Attitude Management
<p>Obtain knowledge of and assess:</p> <ul style="list-style-type: none"> - Integration of the environment in the day to day business (2); - Realisable environmental targets; - Environmental improvements made by management so far; - Value of environmental data to management (4); - Internal commitment to the environmental policy; - Attitude of management towards internal control activities; - Feedback from management to operational personnel; - Evaluation of management's explanations of not being able to meet the targets.
Attitude of employees
<p>Obtain knowledge of and assess:</p> <ul style="list-style-type: none"> - Motivation of employees to carefully handle the data; - Evaluation of the commitments of employees to the responsibilities given.
Risk assessment
<ul style="list-style-type: none"> - Identify whether there is an internal risk assessment and if so assess (2)
Information and communication
<ul style="list-style-type: none"> - Obtain knowledge of the environmental information process in general and more specific in relation to certain substances (2); - Assess whether the documentation of the environmental information system is adequate (3); - Obtain knowledge of the activities of the laboratory.
Internal control activities
<p><u>General:</u></p> <ul style="list-style-type: none"> - Obtain knowledge on whether all environmental policy requirements lead to internal control activities; - Evaluate the (documentation of) the environmental management system (4); - Perform tests of control on the operation of environmental management systems (2); - Perform tests of control on the compliance with internal procedures (2); - Evaluate segregation of duties (3); - Follow the audit trail for the main flows (4); - Evaluate procedure to handle complaints (2); - Evaluate corrective actions as a result of complaints; - Evaluate system for reporting incidents (3); - Assess completeness of the documented overview of flows; - Evaluate checks on incoming and outgoing flows; - Evaluate the frequency of checks on the environmental accounts. <p><u>Substances:</u></p> <ul style="list-style-type: none"> - Evaluate purchase procedure for mercury; - Check whether mercury is only obtained from registered and approved mercury dealers; - Check continuous numbering of invoices received from mercury supplier; - Check whether all mercury in stock relates to purchase invoices; - Evaluate the audit trail of mercury from purchase to emissions (2); - Evaluate whether the amount of waste in stock in the accounts is similar to the actual amount of waste in stock; - Evaluate the procedure for weighing waste; Perform visual checks on waste; - Evaluate protocols prepared for the burning of waste (2).

Measurements:

- Evaluate acceptability of the ways to obtain the source data: the measurement programme, calculations and estimates;
- Evaluate the choice to report and measure at certain points (3);
- Evaluate whether the method of measurement, if applicable, is in compliance with the license requirements;
- Assess the acceptability of the frequency of measurements;
- Evaluate the acceptability of the analysis made of the samples that were measured;
- Assess whether measurement and calculation methods are authorised;
- Assess whether measurements are performed accurately;
- Assess whether methods of measurement are documented;
- Perform tests of control to assess whether measurements and calculations are performed in accordance with procedures;
- Obtain evidence whether the company's management on a regular basis assesses the need for adaptations in obtaining the source data;
- Evaluate completeness of emission points;
- Evaluate the emissions points measured in relation to the fugitive emission points at seals, pumps, pipes (2);
- Assess whether measurements are performed on all registered emission points;
- Evaluate contracts with external laboratories and experts performing measurements regarding the methods agreed upon and their purpose (2);
- Evaluate name and reputation of the external experts performing the measurements;
- Evaluate the similarity between measurements performed by the company itself and those performed by external experts or authorities (2);
- Review log files in order to evaluate the maintenance of measurement equipment and its calibration (6);
- Assess for each substance the internally applied maximum level of deviation that is acceptable; Assess the spread in measurements;
- Evaluate whether the measurement equipment operates continuously;
- Evaluate the procedure for adjusting the source data (4);
- Evaluate the acceptability of the adjustments made to the source data (3);
- Evaluate the scope of the ISO 9002 certification of the laboratory (2);
- Evaluate whether the laboratory has a STERLAB certificate for all key indicators (2);
- Assess the independence of the laboratory from the production facilities (3);
- Identify whether they evaluate deviations in measurements and if so assess such evaluations;
- Assess whether the forms to fill in the source data are adequate;
- Evaluate round off of numbers.

Data processing:

- Evaluate whether all measurement points are included in the environmental information system;
- Evaluate whether there are built-in checks in the spreadsheet programme used;
- Evaluate internal analyses of data and the conclusions;
- Assess the accuracy of the data entry;
- Assess whether back-ups are made;
- Check whether no unauthorised changes can be made in the files;
- Assess whether there are data that have not been processed and evaluate the reason why.

Monitoring

- Assess compliance with the environmental business plan (to evaluate the operation of the environmental management system);
- Evaluate the internal audit of the environmental management system.

The table includes tests of control as mentioned by the research subjects.

There were no procedures mentioned in relation to the risk assessment performed by management in relation to information risks. Probably because such assessments were not made yet at the time. The only risk assessments made were the ones related to the environmental impacts of the company's processes and products. Most of the evidence obtained in relation to management concerns evidence necessary to evaluate the commitment of management to the environment. There were no audit procedures in relation to the reliability of the formulas used in the spreadsheet programme. Table 6.13 shows the analytical procedures and substantive procedures that will be performed.

Table 6.13- Analytical procedures and substantive procedures

- | |
|--|
| <ul style="list-style-type: none">- Evaluate whether the selected key environmental indicators sufficiently present the company's environmental performance;- Evaluate the draft report;- Evaluate the view presented by the report (2);- Evaluate the completeness of the parameters;- Assess the relation between the environmental report and the annual financial accounts;- Evaluate the consistency between the different reports (e.g. to authorities);- Evaluate environmental performance against the environmental policy and targets;- Evaluate data in the draft environmental report (5);- Perform an input-output analysis;- Assess whether there is a relation between inputs and outputs in the financial accounts;- Assess the relation between the financial accounts (e.g. expenses) and the environmental accounts;- Evaluate deviations in measurements;- Compare number of complaints with the number of incidents in the accounts;- Consult external and internal lawyers;- Check the accuracy of the data entries on a test basis (3);- Check the calculations made by the accountant on a test basis (2);- Check on a test basis whether the laboratory has assessed the data against license requirements. |
|--|

Other procedures that were mentioned were:

- Evaluate the remaining audit risk;
- Insight into information needs of users;
- Perform stakeholder surveys;
- Evaluate the management assertions on stakeholder needs;
- Evaluate sufficiency of the notes to the data.

The stakeholder surveys seem to be intended to assess the completeness of the information included in the environmental report and to assess their adequate presentation.

In total, a reference was made twice to a multidisciplinary team. One mentioned that the accountant would be responsible for the compilation of the report and the consolidation

process, while the environmental expert was responsible for the data collection and measurement. Also, once a reference was made to the fact that an external expert should perform a visual check on waste.

Further, it was said twice that the environmental consultants would interview the financial accountant to identify the weak spots in internal control.

The emphasis of the procedures performed is on the reliability of measurements. The various procedures that were mentioned only once were complementary. As such the verbal protocol analysis added to the insight in the different kind of procedures that are performed in practice. At the same time the research results confirm the results found in chapter 4 that the audit work performed varies considerably amongst auditors.

6.7 Application of the risk analysis in practice

A verifier who performed the EMAS verification of a subsidiary of a large multinational chemicals company was asked to write down his own risk analysis. This risk analysis was made in 1997. The verifier wrote down the risk assessment during the EMAS verification. Below is the English translation of the risk analysis.

Assessment:

During all the contacts with the client in previous years, the client showed in a convincing way that environmental care was seen as an important issue for the company. As early as 1986/7 they introduced an environmental policy and an environmental management system. The client clearly has open communication with the local community, the government and the auditors. Therefore, there is no reason to doubt the integrity of the company's management. Already during prior audits, it appeared that the client has much environmental knowledge and experience. The company even has a leading role within the chemicals industry, an industry that is already ahead of other industries. This applies especially to the centrally located ecology department, but increasingly also in the line management of the plants. The company's board of directors, but also the government, places a great deal of pressure on the environmental staff department as well as on the operational and environmental managers within the departments of the plant to further improve the environmental performance and reduce the number of incidents. This last point is even related to a variable remuneration element for the managers. All possible environmental aspects apply to this chemicals production plant.

The local government of the province spends much attention on this company, in my opinion verging on the unreasonable. Employees of the province that is in charge of checking compliance with laws and regulations are occupied almost full time with this company. Despite the fact that the company is seen as a leader, the pressure is high. In general, the public and the green pressure groups see the chemicals industry as the most important polluters. On the other hand, research has shown that the chemicals industry is leading

developments in the implementation of the environmental management systems.

An initial audit in June 1996 showed that the measurement and registration of emissions to air is a very difficult topic. The reasons for this include:

- the large number of sources (both primary and diffuse);
- difficult to measure;
- complicated calculations.

Reliability of the environmental data has only recently become a point for attention. The greatest emphasis was always on the comparison of environmental data with the norm. A lot of money is required for (hazardous) waste disposal. In addition, the investments required to reduce emissions to air and water are very high. The location of company is in principle favourable and therefore forms no risk. The area is sparsely populated and not in the vicinity of other companies, so no domino effects will occur.

There is a relative openness on violations of environmental laws and on incidents. There is open communication with the local community

The company is generally very aware of the environmental and safety risks of the activities performed. Internal control is not a new item within the company. Worldwide, the company has had consolidated audits already for several years. However, previous audits revealed that this internal control was very abstract. The company also has a large number of inspection programmes. Last year, due to the ISO 14001 certification, a start was made with a new approach to internal environmental audits, followed by management reviews. This approach complies in principle with the ISO 14001 requirements. The results on the quality of the actual performance are still unknown but will be clear in the future. Integrity and ethical values are not under review. It is important to note that knowledge and experience relating to an adequate description of the environmental information system and its related internal controls are still in an early stage. Much information is available in relation to measurements and registration of environmental emissions, but a systematic approach in the thought of management systems is still lacking.

Conclusion of the verifier:

An audit program was developed based on the above risk assessment. In this programme, special attention is given to the developments that took place within the company because of the first EMAS-verification. For this purpose, interviews will be held at the ecology department focused on the measurement and registration of emissions (air, water and waste). In addition, the internal control regarding these matters will be taken in account. Within the production facilities, the emphasis will be on the emissions to air. In addition, the performance of internal audits according to the new approach is an important point for attention.

From the description above the EMAS-verifier identified certain topics that are included in the risk analysis. They include:

- the relative importance of environmental management for the company's board of directors and its management;
- the environmental knowledge and experience within the company;

- the awareness of environmental and safety risks;
- open communication with the local community, the government and the auditors as indicator of integrity of the company's management;
- variable remuneration element relating to environmental performance;
- difficulties in measuring air;
- large number of sources of air pollution;
- complicated calculations;
- the attention for the reliability of data;
- the location of the company;
- the knowledge of the company of environmental information systems and internal control.

The verifier perceived the more structured approach of risk analysis as a very valuable tool during the planning of EMAS verification. More research however is necessary.

6.8 Conclusions

This chapter describes the research results of a verbal protocol analysis, which is based on a real company that publishes an environmental report and during which auditors were asked to think aloud about the audit planning process. The research results are interesting and useful, and reveal a large variety of risks identified and procedures that can be performed during the audit of environmental reports. However, at the same time the research results reflect evidence on the existing unstructured practice, the planning process is still a highly unstructured task. The auditors did not use the planning procedures proposed in ISA 300, 310, 320 and 400. The risks identified are very diverse and there is no consistency in decision behaviour. During the verbal protocol analysis subjects quite often described the audit procedures immediately without identifying the risks first. This may suggest that certain audit procedures mentioned are those that they perform during each audit, which however may not be the most effective ones for a particular audit. The combination with existing theory is necessary to provide more structure in the audit procedures to be performed during the planning process. The planning process will be further described in chapter 8.

Data collected

Of the information that is collected during the planning, the most important was the information on the information system, the internal control measures in general, the analysis of differences between the normative and actual performance and the built-in control measures in the environmental information system. Less important was the information that related to the knowledge of the business and of the audit and certification of the environmental management system or of certain laboratory analyses.

During the whole audit judgement, process information was retrieved from memory. The information retrieved related mostly to different kinds of information on environmental issues, which are of relevance for the reliability of the data. The more experienced auditors

more often retrieve information from memory. Most of the time was spent on evaluation. During the reasoning process auditors make conditional judgements and assumptions. None of the auditors uses probabilistic reasoning. During the evaluation process, certain rules of thumb were also used. Such rules of thumb are often based on experience with other clients or information received from other auditors, this causes a detection risk as audit procedures might be limited based on the wrong assumption.

The auditors involved have a different opinion on the relevance of an ISO 14001 certificate for the audit of environmental reports. For some (6) it would have no or limited influence since there is no examination whether the environmental information system is adequate to provide reliable information. The others however believe that it has major influence on the planning of the audit procedures since it provides guarantees on a systematic approach to environmental issues, including measurement and registration. The opinions on the influence of a framework license were mixed in a similar way. For five auditors it would not make any difference, while for the other five it would have some influence .

Knowledge used

The knowledge that was said to be most important for the auditors was the knowledge of audit techniques and of the environmental information system and measures of internal control. The knowledge that was used most often during the verbal protocol analysis was the knowledge of substances, of measurements and of the information process as a whole.

The assessment whether the environmental information system reflects the actual environmental performance requires knowledge and auditing methods and techniques that are specific to the environmental domain. The assessment whether the environmental report is compiled on the data from the environmental information system is less specific for a particular domain and therefore methods and techniques that are more general can be used. For an effective audit approach, both subject matter knowledge and audit knowledge is required. For an adequate interpretation of audit evidence knowledge of the subject matter, in this case environmental knowledge, is essential.

Risks identified and evaluated

The risks identified most often concerned entity specific internal control risks in obtaining the primary source data such as measurements and calculations. All auditors mentioned these risks. These kinds of risks are specific for auditing environmental reports and provide a useful input for the framework. Further internal control risks in relation to data processing were mentioned by 8 auditors. Almost no inherent risks were mentioned. Also, entity specific risks in relation to the location, business process, environmental aspects and incidents were not mentioned often. Four auditors only mentioned management risks. Some of the risks mentioned tend to be environmental risks rather than information risks, although as a result of the environmental risk data may be biased. The identification of risks seems to be related to experience since the more experienced auditors mentioned the most risks.

Audit procedures that will be performed

The kind of audit procedures that the auditors would perform varied considerably. Sometimes the level of detail caused this, but most often, they were different. Most of the procedures mentioned however were complementary, which may indicate the importance of working in a multidisciplinary team. The auditors, even though they are referred to as environmental, had different backgrounds in education and experience. Again, most procedures were focused on the reliability of obtaining the primary source data such as measurements and calculations. From the literature and case study on the environmental information system within environmental management systems, it appears that there are many irreplaceable measures of internal control. In assessing whether the environmental information system reflects the actual environmental performance in a reliable way much emphasis is therefore placed on collecting evidence on measurements, analyses and the assumptions and methods used for calculations and estimates.

Although there was little consensus between the auditors, the research results provided interesting contributions to the framework. Especially, the kind of risks relating to the way primary source data are obtained are additional to those general risks already identified from literature (described in paragraph 6.3). The research results are incorporated in the framework discussed in chapter 8.

Chapter 7 The audit report

7.1 Introduction

In chapter 3 a general framework is described for the contents and quality of the audit report. In this chapter the framework is further refined for audit reports on environmental reports. The literature provides some guidance for audit reports on environmental reports. By means of a content analysis of audit reports in Europe, an insight is gained into how auditors report their conclusions and some 'best practice' is identified especially for how to describe the different topics so that they comply in principle with the qualitative characteristics. However, further insight into the views of stakeholders in particular is necessary.

From the theory of Limperg on rational expectations it is clear that the audit judgement should be reported to the interested parties in such a way that no other expectations are created than can be justified based on the audit work performed and the expertise of the auditor or the audit team. The auditing of financial statements has developed over many decades. During this time accounting standards for financial statements have been developed and insight has been gained into the way the financial statements are used and into the expectations of the users of the financial statements. For reporting the results of an audit of financial statements, certain guidelines exist regarding the type of the audit reports and the contents. The International Standard on Auditing 100 on 'Assurance Engagements' (2000) provides probably the best guidance available at present. For reporting the results of an audit of environmental reports, however, no standards exist yet. In relation to the contents of the audit report on environmental reports IFAC included suggestions in its discussion paper "The Audit Profession and the Environment" (1995) for the wording of unqualified audit reports on environmental reports. One example relates to the situation in which accountants are lead auditors and the other example relates to the situation in which the audit is performed jointly by an audit firm and an environmental consultancy firm. Without getting into discussions about the role of the accountant in auditing environmental reports and the responsibilities of the different types of auditors, the following remarks may be made in relation to those examples:

- the audit criteria used to assess whether the audit objectives are met are not specified;
- reference to the international standards on auditing was made, but these provide insufficient guidance for the performance of audits of environmental reports;
- the inherent limitations of an audit, which will always appear in auditing environmental reports, are not included in the suggestions made.

By means of the audit report, the auditor accounts for his/her responsibilities in relation to the task that was assigned to him/her. Just like an environmental report, the audit report should fulfil the quality requirements set by the users of this report. Some insight into the expectations of users is provided by the research results of The Global Environmental

Management Initiative (GEMI) and the Investor Responsibility Research Center (IRRC) (GEMI/IRRC, 1996). They asked users of audits about the relevance of elements that can be included in the audit report on an environmental report (see also paragraph 5.2). The research results of GEMI/IRRC (1996) suggest that the accuracy of the data was the most important topic followed by recommendations for improvement and follow-up of previous recommendations. This suggests a need for both an audit and a consultancy approach. It also suggests that the information the accountant normally includes in /her/her management letter should be included in the audit report. Discussion of the company's risks is a topic that in my opinion should be included in the environmental report itself rather than in the audit report. Based on the research results of GEMI/IRRC (1996), the following items are relevant for inclusion in an audit report related to an environmental report:

- description of recommendations for improvement;
- description of follow-up of previous recommendations;
- technical recommendations;
- most important company risks discussion;
- standards used by the auditor;
- audit program description;
- sampling procedure;
- signature of the auditor;
- opinion on:
 - accuracy of the data;
 - no business areas excluded;
 - balanced tone.

Users of audit reports apparently have a need for explicit recommendations for improvement and follow-up of previous recommendations. In my opinion, this is due to the present early stage of development of both environmental reporting and auditing environmental reports. In this early stage many different audit engagements exist, some of which are mixed with consultancy engagements. This is confirmed by the research of Ball, Owen and Gray (2000). Their research established that 46% of the audit reports accorded with a consultancy-type relationship. The audit of environmental reports is however limited to the reporting process and does not include quality opinions on management or performance. If users of audits have such a need a company can in addition to the audit invite independent experts to give such opinions.

The conclusion of the auditor may also be given in other ways, such as a presentation to stakeholder meetings. Also, the findings of the auditor may be reported in more detail together with recommendations to the company's management by means of a management letter. This however is beyond the scope of this research.

7.2 Research method

The research was performed by means of a detailed content analysis of the 68 audit reports that were included in environmental reports. A detailed form was used to identify, for each audit report, whether topics were included, and if so how they were described and what examples of good and bad practices could be identified. The research results were entered in a database. In order to safeguard the consistency in analysis both the topics and the various indicators for the qualitative characteristics that had to be identified were written down in advance. In addition to the analysis per audit report, the 68 audit reports were analysed again for each topic and the results were checked against the information written down during the analysis of the audit report as a whole.

As to the contents, the topics discussed in chapter 3 were identified. As to the quality, different indicators were identified. Table 7.1 shows the indicators relating to the quality of the audit reports that were used in the research.

Table 7 - 1: Overview of quality indicators audit report

Quality characteristic	Indicator
Completeness	All topics included Scope limitations explained
Comparability	Similar structure of the audit report
Consistency	Within the report: similar scope of the engagement, audit procedures and conclusion
Faithful representation	Explanation of qualifications and reservations and of material inherent and specific limitations
Prudence	No true and fair view without sufficient audit procedures
Neutrality	No value statements
Understandability	Subheadings No technical terms Explanation audit procedures
Relevance	Length of audit report No information that could also be reported in the environmental report
Timeliness	Date of audit report
Credibility of auditor	Independence: Reference to independence Competence: Reference to profession and to multidisciplinary teams Professionalism: Reference to codes of conduct and standards on auditing environmental reports

Collection of the audit reports

The purpose of the empirical research is to assess the quality of audit reports and to identify 'best practice' for the contents of the audit report that can contribute to the further

development of the framework. Therefore, as many audit reports as possible were collected. Publishing environmental reports is still voluntary. There is no database for environmental reports. Therefore alternative ways had to be found in order to obtain the audit reports. Best practice is not limited to the big companies, therefore different strategies were needed to collect the audit reports from all categories. A variety of sources was used to identify companies that could have published an environmental report that had been audited. These concerned:

- European Environmental Reporting Award 1997 and 1998;
- UNEP /Sustainability The 1997 Benchmark Survey, The third international progress on company environmental reporting;
- The KPMG International Survey 1996 and 1999; and
- FEE Research paper on Expert statement in Environmental Reports (1996)

The KPMG surveys are based on the top 100 companies in 11 countries (1999) and 13 countries (1996). In addition, this 1999 survey included the Global Fortune Top 250 companies. Although the biggest companies often seem to be leaders in new initiatives taken, the results in chapter 4 show that smaller companies also undertake some innovative initiatives in the environmental field in auditing environmental reports. Therefore the companies included in the UNEP 100 companies (excluding non-European countries) and the companies that were selected to participate in the European Environmental Reporting Award (see table A 7.2 in Annex 7.2) were taken into account. In 1994 UNEP identified the 100 companies that first took the initiative to publish some form of an environmental report. Since more environmental reports were published in 1997 they took a sample of 100 companies who were selected based on expectations and experience³⁶. The European Environmental Reporting Award is a scheme for the best European environmental report. In 1996 three, in 1997 four and in 1998³⁷ six accountancy bodies in Europe organised this award. In 1996 (reporting year 1995) and 1998 (reporting year 1997) initiatives from the participating countries only were taken into account. In 1997 initiatives from all European countries were taken into account. In addition, the companies were included that were also investigated in the research described in chapter 4 and 5. The motivation is that these companies were the companies that started with the audit of environmental reports. In addition they received the FEE research report in which the alarming research findings were described in relation to the audit reports included in their environmental reports and in which recommendations were given for audit reports.

Limitations in search

The search was limited to Europe since most of the audits of environmental reports take place in Europe. This is confirmed by the studies of UNEP (1997) and KPMG (1997a, 1999a). The

³⁶ The sample selection was not described in the report, but this information is based on an interview with one of the researchers (Nancy Bennett).

³⁷ The participating countries are still increasing. The EERA 2001 (reporting year 200) includes accountancy bodies from 15 different countries.

UNEP top 100 (of which are 42 non-European companies) shows that 28 environmental reports were audited of which 26 came from Europe.

The search was also limited to the most recent reporting year at the time of the research (1997 or in the UK 1997/98). The research results described in chapter 4 showed that the audit reports in 1994 and 1995 were quite different and that the way in which the opinion was formulated was alarming because it might create much more assurance than in fact could be given. For the reporting year 1997 auditors may have obtained more experience in preparing audit reports.

Collection of the audit reports

The audit reports were collected as follows:

- Whenever contact details were available, requests were made to the companies;
- Consulting the database of Next Step Consulting, who by means of questionnaires have collected data on companies, i.e. whether they have an environmental report and whether it is verified and by whom;
- Requests to members of FEE Environmental Working Party;
- Requests to members of the Management committee and judges panel of the European Environmental Reporting Award;
- Requests to the Institute for Environmental Management that was responsible for the KPMG International Survey;
- Checks on the websites, if available, of the particular companies involved.

Reports received and analysed

A total of 85 audit reports were received or found. Two companies state explicitly in their environmental reports why they did not choose to have their environmental report audited. Severn Trent states the following reason:

“...much data are authenticated by either the Environmental Agency, the Drinking Water Inspectorate or OFWAT. Other data that we publish has in previous years been verified by independent consultants. The trends are now well established so this year we have decided that we can rely on our own internal verification for the data previously verified by consultants”.

Severn Trent obviously perceived an audit more as a kind of consultancy engagement rather than an engagement by which an independent party provides assurance on the reliability of the environmental report. United Utilities states the following reason for not having chosen to have their environmental report audited:

“The external verification or validation of environmental reports is becoming increasingly common. To date however there is little consistency in the scope or terms of reference for these activities. We do not believe that such diverse statements add appreciable credibility to the reporting process and therefore last year we invested our efforts and resources into

research on what our report readers wanted from the reporting process. We will continue to monitor the development of standards in this area”.

Of the 85 audit reports received, a total of 68 audit reports of 57 different companies were analysed. The reasons for not analysing 17 audit reports were:

- 11 audit reports were in a foreign language unknown to the researcher (Banes, Danske Shell, DSB, Faerch Plast, Kong and Post Denmark (2 audit reports) from Denmark; Norske Shell from Norway and BTL, Perstop and Stockholm Energis from Sweden);
- 2 audit reports related to an audit of the social audit process (Body Shop and Co-opbank, both UK);
- 1 audit report related to a certificate for animal protection (Body Shop, UK);
- 3 audit reports were independent views rather than audit reports (Co-opbank, Vauxhall and Wessex Water, all UK).

The difference between the number of audit reports and the number of companies is caused by:

- Royal Dutch/Shell, which has two different audit reports in its corporate environmental report and has audit reports from 6 subsidiaries (of which one includes also two audit reports);
- British Airways which in addition to the audit report in the corporate environmental report has 3 audit reports in environmental reports of subsidiaries;
- Novo Nordisk which has two different audit reports in its environmental report.

Since the audit reports from subsidiaries were all different they were all included in the analysis. Besides, it was helpful to assess the consistency between audit reports. In the Annex, table A.7.1 shows the overview of the audit reports that were analysed. Twice an audit report was received that covered the period 1996/97 and once the period 1996. Since these were the most recent environmental reports for those companies at the time of the research, those audit reports were included in the research.

Figure 7.1 shows that most audit reports come from the United Kingdom (29), followed by the Netherlands (11) and Denmark (6). Most audit reports were included in environmental reports of companies and subsidiaries of companies from the European Top 1000 (55 in total). The remaining 13 audit reports were received from some smaller companies.

Figure 7.2 shows that audit reports come from both environmental consultants (34) and audit firms (33), with one exception, which comes from a scientist. The audit reports from audit firms are issued both by accountants and environmental consultants.

Figure 7.1

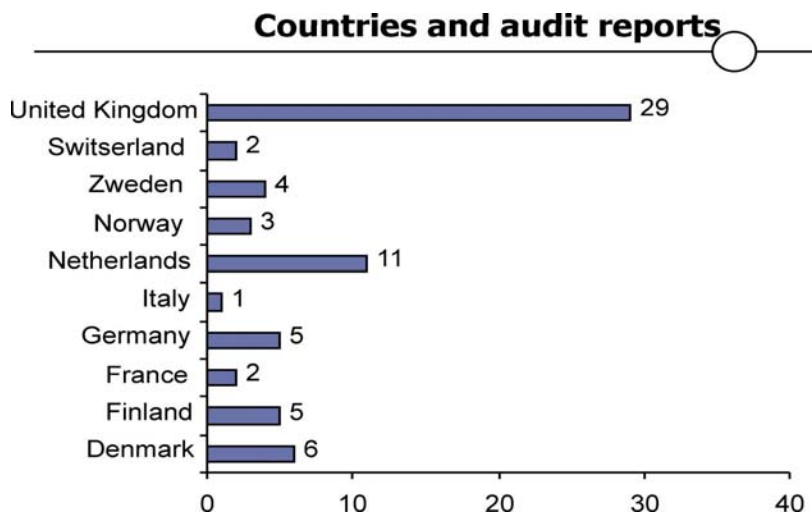
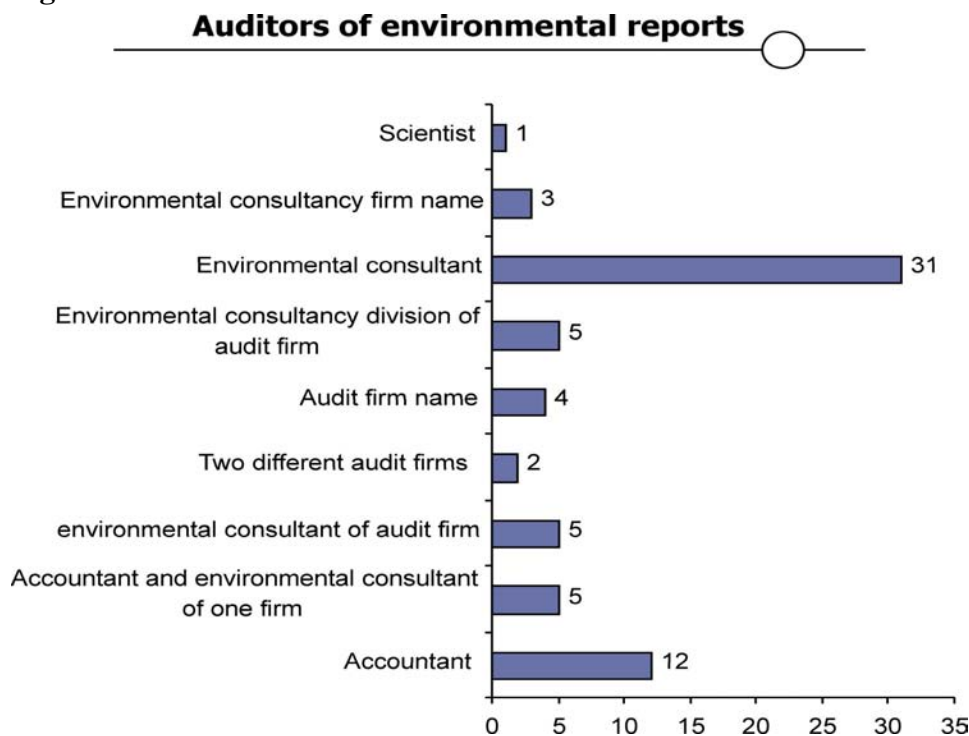


Figure 7.2



Since there is no official record anywhere to justify whether the audit reports obtained form a representative sample, only comparisons can be made with the samples found in other researches.

In the KPMG International survey 1999 (KPMG/WIMM, 1999) a total 1193 companies were included from the Global Fortune Top 250 and the Top 100 in 11 countries. Of the response of 1080 companies a total of 296 environmental reports were obtained of which 50 were audited (17%) of which 4 came from non-European countries and 46 from European

countries. In the analysis by KPMG 8 audit reports were excluded for language reasons. In the KPMG International Survey 1996 (KPMG/Lund University) a total of 1300 were included from the Top 100 in 13 countries. Of the response of 903 companies a total of 220 included some form of environmental report of which 32 were audited (15%).

In the UNEP/Sustainability survey (UNEP/Sustainability, 1997), of the 100 companies selected 28 environmental reports (28%) were audited of which 17 listed on the European Top 1000, 9 European companies not listed on the European Top 1000 and 2 non-European companies. The survey covered the 1996 environmental reports. 22 of these companies have been included in this research (based on their 1997 environmental report). Others have not been included since they concerned EMAS verifications or environmental reports from non-European companies.

In the NIVRA survey on corporate environmental management (Hibbitt and Kamp-Roelands, 2001) 651 companies were included that were all listed in the European Top 1000. Of the response of 187 companies, 47 (25%) have an environmental report that is audited. This also included EMAS-verifications.

The KPMG UK survey 1997 (KPMG, 1997) identified 10 companies in the Financial Top 100 that had their environmental report audited.

A more recent study by Ball, Owen and Gray (2000) was based on the annual award for the best environmental report in the UK, the ACCA Award. They surveyed the audit reports in environmental reports on the ACCA Award shortlist covering the period 1991/92 to 1997/98, a total of 79 environmental reports of 53 different companies. The short-list of 79 environmental reports was selected from 262 entries in the scheme during that period. They identified 53 (67%) environmental reports in which some form of assurance is provided. The number (67%) is high, but partly this is explained by the fact that:

- only the better environmental reports are included in the shortlist;
- certain companies that had their environmental report audited were included in the shortlist for several years and therefore more than one audit report was included for several companies in the study; and
- all forms of assurance were included, including independent assessments by NGO's and reports based on the audit of the EMS.

Compared to these other researches the number of 85 audit reports received is high. Although only 68 were analysed further, it still may be assumed to be a representative sample of the European audit reports included in environmental reports.

7.3 Research results

In this paragraph the results are first discussed in terms of the topics that can be identified in audit reports and the way in which this was written down. Next, the quality of the audit reports is discussed. Examples of good and bad practices identified are given. Finally, the implications for the framework are discussed.

7.3.1 Contents

Title

According to IFAC (2000) an appropriate title helps to identify the nature of the assurance engagement being provided, the nature of the report and to distinguish the practitioner's report from reports issued by others such as those who do not have to abide by the same ethical requirements as the practitioner. It appears that IFAC wants to refer clearly to both the auditor and the type of engagement. 67 audit reports contained some form of title (see table 7.2). The titles used different references. Most often the kinds of reference concerned the type of the engagement (28 times/41%) or the auditor (27 times/40%).

It is important for the users to identify the type of engagement. The research results in chapter 4 and those from Ball, Gray and Owen (2000) show that the scope of these engagements is not always that of audit engagements. In fact, they vary from audit engagements, and compilation engagements to consultancy engagements. Sometimes engagements include both audit and assessment. In order to prevent users from expecting more from the assurance engagement than reasonably may be expected, it should be clear from the outset what kind of engagement it is.

A reference in the title to the kind of auditor is not recommended since auditors can perform different kind of engagements. A reference to the type of engagement is to be preferred. The research results in table 7.2 show that only 28 times (41%) a reference was made to the type of the engagement. The names used for the engagements however differ and (as will be discussed later in this chapter) do not always comply with the kind of engagement stated in the audit report. This makes it confusing for readers. In the title the word 'verification' is used most often (21 times/ 31%). Verification is however only part of an audit. A reference to the type of the engagement and the logo of the audit firm next to the title however may be clearest. It is important that the type of engagement used in the title is consistent with the type of engagement stated later in the audit report.

The distinction between engagements could be limited to full scope audits and limited scope audits. An agreed upon procedure engagement is in fact a limited scope audit.

In order to prevent confusion for the readers and since no assurance is provided, auditors should not provide audit reports when performing compilation engagements. The text of the audit report itself can for instance state that external consultants assisted in the reporting process.

Table 7.2 - title of the report

Reference to auditor	Number	Reference to type of engagement	Number	Reference to subject matter	Number	Other Reference	Number
Auditor's report	8	Verification statement	14	Verification of ...	1	Statement	5
Verifier's statement	4	Verification	3	Verification and validation of ...	1	Certificate	1
Verifier's report	1	Validation statement	3	Audit report on ...	1		
Verifier's opinion	1	External verification	2	Auditing statement on ...	1		
[name of audit firm...] report	1	Review report to ...	1	Opinion on...	1		
Accountant's report	1	Audit report	1	Targets verification statement	1		
Independent report by ...	1	Environmental verification statement	1				
Statement of external auditors	1	Examination report	1				
Statement by the independent reviewer [name firm]	1	Independent verification statement	1				
Statement [name firm]	1	Certification	1				
Appraisal by..	1						
[name firm] appraisal statement	1						
Independent auditor's statement	1						
[name of audit firm] verification statement	1						
Report by ...	1						
Validation by ...	1						
Report of the independent verifiers	1						
Total : 67*	27		28		6		6

*In one instance there was no title.

The research results show that many different names are used as title. The type of engagement is not always clear from the title. If the type of the engagement is stated in both the title and the audit report it is interesting to see whether there is consistency. The consistency between the title of the audit report and the engagement performed is discussed in paragraph 7.3.2. Reference to the type of engagement is made in the audit reports, except for one. Table 7.3 shows the types of engagements mentioned in the audit report.

Table 7.3 - Type of the engagement

Name	Number (percentage)
Verification	18 (26%)
Review	15 (22%)
Independent verification	10 (15%)
Audit	6 (9%)
Examination	5 (7%)
Certain control procedures	4 (6%)
Assist in compilation	4 (6%)
Independent verification and validation	1 (1%)
Formal independent review	1 (1%)
Independent appraisal	1 (1%)
Investigation	1 (1%)
Verification assessment	1 (1%)
Not mentioned	1 (1%)
Total	68 (100%)

The names of the engagements differ. Again ‘verification’ is used most often. This is confusing since verification is only one part of auditing.

Engagements apparently not only include audits but also assessments, as the findings of the audit show (21 times/31%). These assessments include assessments of the environmental management system (5 times /7%), the reporting process including consolidation (8 times) and environmental performance (8 times/12%). An example of an audit and assessment engagement is given in the audit report of Sustainability in the environmental report of Novartis. The scope of the engagement concerned:

- *“validate the collation of the data;*
- *verify the statements made in the ER;*
- *comment on the company’s environmental performance;*
- *comment on the adequacy and appropriateness of the company’s measures of performance to ensure compliance with its stated policies”.*

Ball, Owen and Gray (2000) assessed that 50% of the engagements in their research were independent audits of the environmental report (which they refer to as independent

verifications), 4% concerned assistance in the (internal) audit (referred to as audit) and 46% consultancy type engagements. Their findings suggest that the engagements may change in time. An auditor may first be engaged in assisting in the process of preparing environmental reports or in implementing and improving environmental management systems and in later years may be involved in the audit of environmental reports.

Reference to provider of the engagement

Ball, Owen and Gray (2000) see the reference to the provider of the engagement as an indicator for independence. The nature of the auditee/auditor relationship is made transparent in this way. However, it may be questioned, even when the relationship is made transparent, whether the auditor is always independent. 35 times (51%) some kind of reference was explicitly made to the fact that the company commissioned the auditors or that they performed the engagement at the request of or on behalf of the company. When comparing this to the kind of auditors no relationship could be found. Some environmental consultants referred to the provider in all their engagements. These include Sustainability, SGS, Lloyd's Register, Entec and Arthur D. Little. Some other firms such as Ernst & Young, Det Norske Veritas and Deloitte and Touche never made such a reference. Auditors such as KPMG, PricewaterhouseCoopers and Aspinwall show little consistency and sometimes refer to the provider. The lack of consistency even within firms indicates that there is clearly no firm-wide policy yet in relation to these matters.

There were no cases of references to any supervisory board, like to board of commissioners that had issued the engagement.

Addressee

Sometimes there is discussion on whose behalf the audit is performed. In some countries such as the Netherlands one finds that the audit is performed on behalf of the users of environmental reports. By means of the addressee one can show that although the company engages the auditor, he/she performs the work on behalf of the users. Other countries find that the audit is performed on behalf of the board of directors and that they can then decide to include the audit report in their environmental report. It all has to do with corporate governance structures and the model that is used for this corporate governance (see also chapter 2). In principle, the audit is the responsibility of the supervisory board. Since they may not have the competence, they may assign this task to auditors. The supervisory board should be a representation of all company's stakeholders and therefore one can say that the addressee of the audit report is the supervisory board, but implicitly the readers of the environmental report.

The addressee is only mentioned in 15 (22%) of the audit reports. This included once a more implicit reference, because the audit report was in the form of a letter and the addressee of the letter was the company. Also once there was a letter that has no addressee but states that:

*“This present letter was written to summarise to the reader the results of the verification”
(Dames & Moore International in ENI).*

Again, none of the addressees concerned any supervisory board of stakeholder representatives.

In total, 5 times (7%) a reference was made to the board of directors, 5 times (7%) to the company itself and 5 times (7%) to the readers of the environmental report. A reference to the board of directors or the company itself may indicate that the audit is still perceived more as an exercise to further improve the reporting process rather than as a process to provide assurance on the environmental report.

Scope of the audit

The description of the scope of the audit includes the following items:

- subject matter, including the name of the organisation that issues the environmental report and the identification of the environmental report and of the year on which is reported;
- audit objectives;
- description of any scope limitations.

The subject matter can be described in different ways. If not the whole environmental report is subject to audit, one can choose to describe the subject matter in a positive way. In this way the reader has insight into the topics and/or sites that have been audited. However, if there is no reference to the pages audited or if no reference is made to the topics and/or sites not audited, it is difficult for the reader to assess the scope of the subject matter on which assurance given against the environmental performance of the company as a whole. In this way the scope may be misinterpreted which may then cause an expectations gap. Therefore, it may be preferable to describe the subject matter in both a positive way (what was included) and in a negative way (what has been left out).

Table 7.4 provides an overview of the way the subject matter of the audit was described. It was always described in a positive way, and never described in a negative way only. The reference to pages, topics and sites was mostly worded in a positive way. In 20 cases (29%) a limitation to certain topics was included. Only in three times (4%) was this done by both a positive description (of the topics included) and a negative description (of the topics not included). When certain topics were audited, only in 3 cases (4%) a reference was made to the pages in the environmental report. In all cases, except for one, these limitations were also reflected in the opinion or in the facts of findings described.

In 5 cases (7%) the subject matter was limited to certain sites only. Only once was this done in both a negative and positive way. Twice the audit of this site information was also limited to certain topics. In all these cases, the limitations were also reflected in the opinion or facts of findings.

Table 7.4 - Subject matter of the audit

Topic	Number (percentage)
Description of the company	64 (94%)
Description of pages covered	7 (10%)
Description of topics covered	20 (29%)
Description of sites to which the subject matter is limited	5 (7%)
Reference to the name of the ER	52 (76%)
Reference to period covered	20 (29%)
Reference to reporting principles used for the Environmental report	4 (6%)
Reference to topics not covered	3 (4%)
Reference to the sites or site information not covered	4 (6%)

Limitations in scope

The research results show that descriptions of the limitations in scope occur in:

- the descriptions of the scope of the engagement, for example:

“The audit has not encompassed statements from the rest of the Danfoss Group, except for an assessment of the procedures used for the data compilation” (Danish Standards Association in Danfoss)

“In common with other verifications, we were not asked-nor have we sought- to endorse policy or position statements” (ERM in Cultor)

“We were not engaged to perform any testing of the source documentation used by the reporting units to support their submitted information, or to verify that the accumulated information is complete and accurate.” (Deloitte & Touche in Novo Nordisk and Norske Skog)

“Financial statements and data given in the report have not been verified as these matters are outside our area of expertise” (Aspinwall & company in Nothumbrian Water Group)

- the description of the audit procedures. The audit report of Aspinwall in the environmental report of Unilever is an example of an audit report where the limitation in scope is described in the audit procedures. In the description of the audit work, they state that they only investigated the main report text on page 6 to 39 excluding case studies and reviewed appendices on pages 42 to 44. The audit report of Sustainability

in ASG, following the description of audit procedures, states that *“It should be noted that verification was restricted to ASG’s European operations”*; and

- the conclusions or facts of findings given, for example:
“Sites each employed a systematic approach to the HSE data collection. We have not yet reviewed data collection processes applied at Mobil sites.” (BP by Ernst & Young)

Sometimes the environmental report is itself limited in scope. In the audit report of KPMG and PricewaterhouseCoopers in the environmental report of Royal Dutch/Shell a reference is made to the section of the environmental report mentioning the sites that are included in the environmental report and therefore were subject to audit. An example of an environmental report that forms part of a sustainability report is the report of the Body Shop. The auditor BSI said in the audit report that *“For the purpose of this verification, The Environment section was examined in detail and other sections of the Values Report were only examined where specifically referenced by the Environment section.”*

Limitations in scope not only occur due to limitations in topics or sites that were subject to audit, but also as a result of limitations in the audit objectives, such as completeness.

The research findings show that the subject matter of engagements that concern agreed upon procedures can hardly be identified. The reader only receives information on the procedures performed.

These research findings provide evidence that it is quite difficult for readers to identify the subject matter of the audit engagement. If the subject matter is only positively described it is very difficult to assess the subject matter audited in relation to the total environmental performance of the company.

Name of the environmental report

Especially when companies publish their environmental report on their website, it is important to be very specific on the scope of the audit and the name and year of the environmental report since a great deal of other information is available on this website. The risk exists that the audit report is read separately and if the scope is not explained in the audit report, users may expect a much broader scope. In 16 cases (24%) there was no reference to the name of the environmental report. These research findings suggest that many audit reports do not include a proper reference to the subject matter.

Period covered

Not all companies publish an environmental report every year, some use a two or even a three-year period. Further, the reporting period may not always be the same as the calendar year (from January to December). Therefore information on the period covered is important. In 20 cases (29%) the period covered was described explicitly in the description of the subject matter. In addition, it could be found 9 times (13%) in the description of the conclusion or the audit procedures. Further, it could in 31 cases (46%) be derived from the title of the environmental report as it was described as subject matter. This however is confusing since

especially in the UK the reporting year is often to end of March 1998 and therefore the environmental reports are often called ‘the environmental report 1998’, while on the continent this refers to a reporting year 1998. Such kind of misleading information was found 9 times (13%) . A total of 8 audit reports (12%) did not contain any information on the period covered. These research findings suggest that information on the period covered can be further improved.

Reporting principles

There are no generally accepted reporting principles for environmental reporting yet. For an adequate understanding of the information presented, it is therefore important that companies include the reporting principles used to compile the environmental report. In this way the reader receives some background information on the scope, assumptions made during the data gathering and compilation, the reporting process and the inherent and any specific limitations of the information included in the environmental report. Including the reporting principles in the environmental report is also helpful for the auditor since the auditor can refer in his/her audit report to the explanation of the reporting principles and use it as a specific audit criterion to assess the environmental report. If inherent and specific limitations in relation to the accuracy and completeness of the data are explained well in the environmental report, the need for a qualified audit opinion due to such limitations will diminish.

The research results show that the reference to the reporting principles is very poor. Only 4 times (6%) some form of reference was made to the reporting principles that were used to draw up the environmental report. KPMG in ICI refers to the internal SHE Reporting guidelines. Deloitte & Touche in Novo Nordisk refers to the fact that “*The report has been prepared on the basis described on page 4*”. KPMG and PricewaterhouseCoopers in the Royal Dutch/Shell report refer to the fact that the performance data tables and notes and their opinion should be read in conjunction with the section on HSE reporting policies and limitations.

In addition the following references are made that may be helpful to the reader:

- Reference to the description in the environmental report of the inherent limitations associated with the published data (KPMG in Kemira and Det Norske Veritas in BT);
- Reference to stakeholder consultation through structured interviews and feedback on the previous report (Aspinwall in Scottish Power);
- Publication of the audit report and the reporting principles on the same page in the environmental report (Danish Steel Works and Rhone-Poulenc);
- Information by the company on the preparation of the environmental report and its scope on the same page (Danfoss and Dong);
- Information on the environmental policy and the quality standards used for discharges to water and waste on the same page as the audit report (Northumbrian Water).

The fact that the reference to the reporting principles used to prepare the environmental report is so poor can also be explained by the fact that most companies themselves still do not include this information in the environmental report itself. In addition, most of the auditors

(the group of accountants) are not used to including this in the description, since its is not required by the international standards on auditing.

Audit objectives

Evidence from chapter 4 shows that engagements differ and scope limitations exist due to limitations in audit objectives (e.g. completeness). Therefore, it is very important to describe the audit objectives both in a positive way (what is included) and in a negative way (what is not included).

In 32 cases (47%) some form of reference to the audit objectives was made. Only in 16 cases (24%) was this a more enhanced description. In 6 cases this included (9%) a reference to the international standards on auditing (“to obtain reasonable assurance that the data are free of material misstatement”).

Of the remaining 16 times (24%) in which only a limited description is given this is not always clear, for example: “the objective was to validate the numerical data, to verify the statements made about them in the report and to comment on the company’s overall environmental performance in 1997.” (SustainAbility in Neste).

The audit objectives were all described in a positive way. There were no limitations described in the scope of the audit objectives.

Some examples of audit reports in which the audit objectives are described more explicitly are:

“The audit addressed three specific elements:

- *Whether the report includes all significant environmental aspects and impacts of ENI Group activities;*
- *Whether the report illustrates to the reader in a clear and understandable way all data and information contained in it;*
- *Whether the system for the collection and management data and information used by ENI is suitable and reliable and whether evidence exists to support that the data supplied by single companies or divisions of the Group has been collected and managed in the right way.”(Dames and Moore international in ENI)*

“We therefore planned and performed the exercise in order to obtain reasonable, rather than absolute assurance as to the completeness of the adoption of the Group HSE Policy and associated Procedure and with regard to the reliability of the 1997 data included in the Performance Data Tables and notes.” (KPMG and PricewaterhouseCoopers in HSE Report Royal Dutch/Shell).

“The objectives of the review were to:

- a) *Assess the scope of the environmental information to be collected for the Report and comment on its completeness and appropriateness;*
- b) *Investigate the robustness of the information gathering framework used to collate data for*

inclusion in the Report; and

c) *Examine the Report to assess the reliability and fairness of the information presented” (PricewaterhouseCoopers In Sainsbury)”.*

However, even when more enhanced information was given on the scope one might consider including what was not subject to audit. The research findings provide evidence that information on the audit objectives is still quite limited. Only 24% provide a more enhanced description.

Level of assurance to be provided

The level of assurance is always a major point of discussion for accountants, but does not seem very relevant for environmental consultants. At least it is not noticeably relevant, since only eight times (12%) some form of reference was made to the level of assurance to be provided and accountants made them all. KPMG/PricewaterhouseCoopers state in their audit report in the Royal Dutch/Shell report that “*they planned and performed the exercise in order to obtain reasonable, rather than absolute assurance as to the ...*”. PricewaterhouseCoopers state in their audit report of Tele Denmark that they had agreed with management to review the report and that such a report is not as comprehensive as an audit and therefore does not provide the same certainty with regard to the validity of the data of the report. In the other six audit reports, the level of assurance is mentioned as part of the reference to the international standards of auditing (to obtain a reasonable level of assurance).

Responsibilities of the company’s management and of the auditor

Auditors always want to prevent any unrealistic claim situations. Therefore one might expect to find a clear description of the responsibilities of the company’s management. However, the responsibility of the company is mentioned only 31 times (46%). The responsibility of the auditor was only mentioned 24 times (35%). The reference to the responsibility of the company’s management for the preparation and contents of the environmental report is in my opinion also the most important description. The responsibility of the auditor is already included in the task description. In terms of the kind of auditors that make the reference, it seems that this reference is most often used by accountants or environmental consultants associated with an audit firm (17 compared to 7 by environmental consultants, mostly Aspinwall & company (6 times)). Although multidisciplinary teams also perform audits, in no case was there a reference to the responsibilities of each auditor. Given these results, auditors can still further improve their descriptions of the responsibilities of the company’s management.

Audit criteria

People may have different views on what constitutes completeness, accuracy and other quality aspects of information. Therefore, it is very important that the auditor is clear about the audit criteria that have been used. Only in 26 cases (38%) was some form of reference made to audit criteria that had been used. In 16 cases this was an explicit reference and in 8

cases it could be derived from the opinion or the recommendations. Table 7.5 shows the audit criteria that were used. Since only 26 companies (38%) refer in some form to the criteria they used to assess the environmental report it is obvious that they have used more than one criterion.

Table 7.5 – Reference to audit criteria

Audit criteria	Number (percentage)
Reference to guidance UNEP (6), CEFIC (3), ICC (2), EMAS (5), ISO (2), PERI (1) EC fourth and seventh directive(1), German DIN 33922	21 (31%)
Reference to the company's own reporting policies	9 (13%)
Reference to 'best practice' in environmental reporting/industry	5 (7%)
Reference to international accounting standards	4 (6%)
Reference to mandatory environmental reporting requirements	3 (4%)
Reference to stakeholder needs	3 (4%)
Reference to verification of previous year	2 (3%)
Reference to the environmental report last year	1 (1%)
Audit firm manual	1 (1%)
Method described	1 (1%)
Not mentioned	42 (62%)

In the Tele Denmark, SAS and Royal Dutch/Shell reports the auditors state in their audit report that generally accepted requirements for the contents, method of statement, etc. do not yet exist.

Although no EMAS environmental reports were included, a reference was made to EMAS 5 times (7%).

The mandatory requirements referred to include the Danish Green Accounts and the Norwegian annual accounts on environmental performance. The reference to the EC concerns certain articles on environmental matters in the fourth and seventh Council Directives on accounting guidance. The German DIN 33922 norm refers to a standard for environmental reporting. In one case the contents of the environmental report were partially based on a dialogue with the auditors, who based their selection of the information on their internal manual for environmental reporting.

If there are no generally accepted reporting principles and there is no reference to the audit criteria that have been used to assess the environmental report or to the reporting principles used to compile the environmental report then how can the reader know for example how the auditor has assessed completeness or fair presentation? Should readers just rely on the professional judgement of the auditor or do they want more insight in the judgement process?

The research findings indicate that auditors often do not provide an adequate context for their opinion by not including audit criteria that are important for the interpretation of the opinion.

Description of the audit work performed

In the audit report the auditor accounts for the work being done to show that this forms a reasonable basis for the opinion given. 63 audit reports (93%) contain some information on the audit work performed. In those 63 audit reports, a reference was made three times (4%) to existing audit standards. In the environmental report of Danfoss for instance the Danish Standards Association refers to ‘generally accepted principles and the procedures necessary for us’. In the environmental reports of Otto and Volkswagen KPMG Certification refers to the audit standard for environmental reports of the German Institut der Wirtschaftsprüfer (IDW). In the environmental report of ING KPMG refers to internal guidelines.

Table 7.6 shows the kind of information that was included on audit procedures performed at sites.

Table 7.6 - Kind of information on sites

Kind of information on sites included in the audit report	Number of audit reports	Percentage of total audit reports
Reference to the sites included in the audit, but based on this information it was clear that this was not a representative sample	13	19%
Statement that the reliability of the source documentation was not subject to audit (and therefore implicitly that site information was not audited)	8	12%
Explanation of how the representative sample of sites was derived at	5	7%
Statement that the audit procedures in relation to the sites were only limited to telephone interviews or to evaluating the information received from the sites	2	3%
The only information in relation to sites was that there were no operational sites audited or that the information was only evaluated at business unit level	2	3%
Mentioning that the sample was not representative	1	1%
Total	31	45%

References to the audit work performed suggest that auditors are mindful of any potential legal liabilities arising from their assurances (Ball, Owen and Gray, 2000). While the description of the audit procedures and techniques may be mainly intended to prevent any legal liabilities, the description of the audit procedures may be mainly intended to inform the reader. The reader after all has no audit knowledge and for him/her it is difficult to interpret

the meaning of all these audit procedures and techniques. However, the purpose of the procedures is mentioned only in 17 audit reports (25%) of which only 6 times (9%) in a more comprehensive fashion. Most of the times when the purpose is mentioned, it is only mentioned for some of the audit procedures.

The description of the audit procedures shows that the reliability of the information at the sites is often not covered. In addition, it is not always clear whether a representative sample of sites has been selected. 63 audit reports contain information on audit procedures but only 31 audit (45%) reports include some information on sites, and 32 times (47%) no information at all was included on whether sites had been visited.

Audit reports that describe a representative sample include descriptions such as:

“At 39 locations covering 82% of air, 73% of water and 86% of waste indices calculated in 1997, our work comprised:.....” (Coopers & Lybrand consultants in Rhone-Poulenc).

“..which presented 96% of the sales proceeds, 82% of the net assets and 88% of the employees based on the data reported in the 1997 financial statements of .. (KPMG and PricewaterhouseCoopers in Royal Dutch/Shell)

“..includes visits to ...which together represent 44% of total hours worked and 82% of refinery throughput reported for 1997” (KPMG Management Consulting in Shell International Petroleum Company)

An example of an audit report that clearly states the implications that the sites visits were not a representative sample is: *“These site visits were too limited in scope to form an opinion for the Group as a whole” (Coopers & Lybrand in IVO).*

If there was a multidisciplinary team, there was only in one case (1%) a description of the work that was performed by the other professionals. KPMG and PricewaterhouseCoopers in Royal Dutch/Shell mention:

“We made use of environmental experts where appropriate and, in addition, they confirmed that the parameters disclosed form a reasonable and balanced set of indicators of the Group’s HSE performance”.

Further a reference was made once after the signature of the auditor in which an environmental consultant from another company was thanked for performing stakeholder research on behalf of the client and for the advisory services on structure and content.

In 5 cases (7%) a reference was made to the period during which the audit took place. Some auditors (all environmental consultants) refer to the period during which the audit took place. This concerned a period after the reporting period (e.g. January/February) in all cases. This is alarming since the auditors could not evaluate the operation of the internal controls during the period in which environmental performance is reported. Remarkable was the time mentioned in the audit report of SustainAbility in the environmental report of ASG. It was stated that “the verification process was carried out in January and February 1997”, while the audit report date is 24 February 1998.

A description of the auditing learning process was found in the audit report of KPMG and PricewaterhouseCoopers in Royal Dutch/Shell:

“Our use of the international standards on financial auditing, suitably adapted, as a foundation on which to plan and perform the verification exercise subjected many of the Group HSE management processes to a more rigorous degree of scrutiny than had previously been experienced. Our approach to the verification was refined over the course of the engagement ..”

Materiality and risk assessment, which is very important in the audit of financial statements, is mentioned only once: in Dong KPMG refers to the fact that the audit was performed on the basis of an evaluation of materiality and risk.

Some want to emphasise that there were no subjective limitations imposed by the company by stating that:

“We have received the information necessary for us to verify the propriety of the environmental statement”. (Danish Standards Association in Danfoss); or

“ERM has been given full access to data and personnel-including the President of the company- to test the effectiveness of this approach” (ERM in Cultor).

Some audit work is quite limited e.g.:

“The verification was conducted by meetings and telephone discussions with managers.... Claims were discussed and substantiated and data was sampled” (ERM in Thames Water).

The concerns of such limited audit work however were beyond the scope of the research and were already identified in chapter 4.

The research results show that a limitation in procedures performed is in fact a hidden limitation in scope. Auditors should in relation to the scope of the engagements perform all procedures necessary. Any limitations in scope should already have been described in the scope section of the audit report (see also paragraph 7.4.3.2 consistency in scope of the engagement, audit procedures and conclusions).

Ball, Owen and Gray (2000) conclude on the basis of their research that readers would be unable to assess the principles upon which an auditor had reached his/her opinion. Readers obviously are asked to place trust in the 'professional' competence of the auditor but without any experiential basis on which to judge the integrity of the auditor or, more especially, any systematic evidence concerning the procedures undertaken by the auditor to arrive at an opinion. In their research of the 56 audit reports, 27% made a reference to EMAS, 70% to data review, 32% to site visits, 43% to systems reviews and 61% to interviews.

Level of assurance provided

Limitations in audit procedures performed or evidence obtained may influence the actual level provided. In five cases (7%) it was stated that the audit engagement was not an (full) audit but without mentioning the consequences. In three cases (4%) this concerned a compilation engagement mentioned by an environmental consultancy firm. The other two times (3%) it concerned a review mentioned by an accountant and an environmental consultant associated with an audit firm.

There is no explicit reference to the actual level of assurance actually provided. References to limitations in the level of assurance provided were all given by audit firms, 6 times by accountants and once by a management consultant related to an audit firm. Examples are:

"...such a review is not as comprehensive as an audit and does therefore not provide the same certainty with regard to the validity of the data of the report" (PricewaterhouseCoopers in Tele Denmark).

"The scope of the work and the procedures performed preclude us from providing an opinion as to whether the figures and other disclosures in the Report are free of material misstatement" (Deloitte & Touche in both Norsk Hydro and Norske Skog)

"the procedures do not constitute an audit and therefore they can not provide an opinion as to whether all figures and other disclosures in the report are complete and accurate" (Deloitte & Touche in Novo Nordisk).

"review procedures were limited toand therefore do not constitute an audit or similar verification of all the information in the report. We therefore do not express an audit opinion" (Coopers & Lybrand in IVO)

"We have not performed a full audit and therefore do not provide an audit opinion" (KPMG Management Consulting in Triodos Bank).

"We have not performed an audit and accordingly express no opinion on the data provided by ..." (KPMG in ICI)

Although there is so much discussion within IFAC about the levels of assurance, in practice, in most cases users do not receive any indication of the actual level of assurance provided.

Inherent limitations to the reliability of the data

Chapter 6 shows that there are always certain limitations as to the reliability of the data due to the methods used to obtain the data and/or the preliminary stage of environmental reporting systems. Yet, only 17 audit reports (25%) mention some form of limitation, of which 8 (12%) relate to inherent limitations and 9 to specific limitations as to the reliability of the data.

Examples of inherent limitations in reliability that are discussed in the environmental report include:

“BT has acknowledged the limitations associated with the published data on page 2” (DNV in BT)

“Such systems (to meet group reporting requirements) can provide only reasonable, and not absolute assurance against material misstatement or loss” (KPMG in ICI)

“The inherent limitations of completeness and accuracy of the data are set out in the report.” (KPMG in Kemira)

“The Performance Data Tables and notes, and our opinion, should be read in conjunction with the section headed “Summary of HSE reporting policies and limitations” on page 33. This explains that HSE data is subject to may more inherent limitations than financial data due to the methods used for measuring, calculating or estimating such data.” (KPMG and PricewaterhouseCoopers in Royal Dutch/Shell)

“We acknowledge that in general the nature of environmental data and the methods used for measuring, calculating or estimating those data impose limitations on their accuracy” (KPMG Management Consulting in NAM, Shell Nederland Chemie Moerdijk and Shell Pernis Chemie en Raffinaderij)

“We have taken into account that, in general, methods used for measuring, calculating or estimating HSE data impose inherent limitations on their accuracy.” (KPMG Management Consulting in Shell International Petroleum Company)

Limitations in reliability that are inherent to the subject matter may have an impact on whether a qualified opinion is given unless those limitations are discussed adequately in the environmental report. Of the 8 references to inherent limitations, three relate to a reference to

the pages where those limitations were discussed in the environmental report (BT, Kemira and Shell). Although this is discussed in the environmental report, given the importance of those limitations it is important to draw the attention of the reader to such limitations again in the audit report.

The specific limitations were mostly due to the preliminary stage of the reporting process and relate to an insufficient environmental information system or internal controls. Examples of specific limitations include:

“Although the process would benefit from future refinement, we are satisfied that the reported indicators accurately represent the true environmental performance of Biffa” (SGS Yarsley in Biffa)

“Although the internal control on data can be documented better, we conclude that...” (KPMG Management Consulting in Shell Nederland Chemie Moerdijk and Shell Pernis Chemie en Raffinaderij)

“The findings of the overall report verification exercise revealed that, whilst the verified statements and data in the report are considered to be valid, improvements could be made in the data recording and reporting systems”. (Entec in BAA Gatwick)

“We have found the system (for collection of the data presented in the report) to be generally robust, although recent changes within the organisation have impacted on its effectiveness.” (Aspinwall & company in British Airways)

“...However, the systems for data recording and collation, at operating level were not sufficiently developed during the year to enable management to be confident of the data on certain key impacts.....We have discussed certain weaknesses in the systems for data collation, identified in the course of our work.....As a result the report does not include detailed data on ... and as such the report does not present a complete view of National Grid’s environmental performance. However nothing came to our attention during our work that is in conflict with the information presented in the report.” (KPMG in National Grid)

“Tele Denmark’s identification and mapping of environmental conditions are being completed, as are control and reporting procedures. Therefore a certain amount of uncertainty is attached to the completion and accuracy of the listed environmental data” (PricewaterhouseCoopers in Tele Denmark)

“the reliability of the aggregated Group HSE data is also affected because some operating entities collected and reported data in accordance with local regulations which deviated from Group reporting requirements. In some cases there were omissions in the data collected

and therefore had to be estimated or left out. Where there is a potentially material impact on the reliability of the aggregated data reported, this is explained in the notes to the Performance Data Tables. The notes are important to a proper understanding of the degrees of reliability of the reported data” (KPMG/PricewaterhouseCoopers in Royal Dutch/Shell)

“The environmental management system at the Body Shop is not yet as formal as would be expected of a management system that was controlling the activities relating to an EMAS verification. This gave rise to particular difficulties in the verification of the values presented, as the data, in some cases is gathered as a specific task rather than through a clearly defined company-wide systematic process.” (BSI in Body Shop)

“We believe thathowever, the process of data collection requires further development in some businesses, particularly in non-regulated activities” (Aspinwall & Company in Scottish Power).

When certain limitations or qualifications occur, auditors may also choose to present their findings not in the form of a conclusion but as facts of findings. However this is difficult to interpret for the readers, because they still do not know what the impact is on the accuracy and completeness of the data presented in the environmental report. This was done by PricewaterhouseCoopers in Tele Denmark:

“We can confirm that: the listed data on employee and risk management correspond to the internal statements presented to us; the listed environmental data correspond to the documentation presented to us; and in our opinion the data contained in the environmental report are presented in an informative way”.

Although there was no limitation in the scope (only that it was a review rather than an audit), it appears from the conclusion that there was a limitation in scope. The readers do not receive an opinion on the environmental report as a whole. As such, the opinion does not add much assurance.

A qualification can also be given as a result of a disagreement with management about the content of the environmental report. However, none of the audit reports contained a reference to any disagreement with management.

Ball, Owen and Gray (2000) found in their research that 39% of the audit reports mentioned some form of weakness of the data.

Conclusion paragraph

The audit report should include a clear conclusion paragraph which creates no more expectations than can be justified on the basis of the audit work performed and the expertise of the auditor or audit team;

In the 68 audit reports the conclusions were presented in different ways, not only the wording varied, but also so did the structure of the conclusions. In one case the audit report consisted of just the conclusion. Some audit reports start with the conclusion, others end with the conclusion. Different wordings are used for the presentation of the conclusion. Most often “in our opinion” is used (21 times/31%) , followed by “Is satisfied that /have satisfied ourselves” (10 times/15%) and “we can confirm that...”(10 times/15%). Table 7.7 shows an overview of the structure of conclusion given. Where various conclusions were given they were sometimes given in different sections in the audit report.

Table 7.7 - Structure of conclusions in the audit report

Various conclusions	Overall conclusion	One conclusion	Facts of findings	Recommendations	Total
X	-	-	-	-	22 (32%)
X	-	-	X	X	14 (21%)
X	-	-	-	X	6 (9%)
-	-	X	-	-	6 (9%)
-	-	-	X	X	5 (7%)
X	-	-	X	-	3 (4%)
-	-	X	X	X	3 (4%)
-	-	-	X	-	3 (4%)
X	X	-	-	-	2 (3%)
-	-	X	-	X	2 (3%)
X	X	-	X	X	1 (1%)
-	X	-	X	-	1 (1%)
48	4	11	30	31	68 (100%)

The trend in audit reports is to give more than one opinion. In 6 audit reports only one conclusion was found. All other 60 audit reports (88%) contain a variety of conclusions and/or facts of findings. Of the 48 audit reports (71%) in which more than one conclusion was reported, in 9 cases (13%) it was presented in different parts of the audit report. This may make it quite difficult for the reader. In some reports, both conclusions and facts of findings were given. If more conclusions or facts of findings were given, it adds to the understandability for the user if an overall conclusion is provided. Yet only in four audit reports (6%) was such an overall opinion given. Once this concerned an overall opinion on facts of findings.

In 31 audit reports (46%) the conclusions or facts of findings were supported by recommendations. These include eight audit reports (12%) in which some information on a follow up on previous recommendations was given.

Six audit reports (9%) contained some form of value statements. In addition, four reports (6%) stated that significant progress in environmental management had been made without explaining what the major improvements were.

If more than one conclusion was given this does not necessary imply that conclusions are given on a variety of topics. Table 7.8 shows the topics on which conclusions are given.

Table 7.8 – Topics on which conclusions are given

Topics	Various conclusions	Single opinion	Facts of findings
Environmental report	32 (47%)	9 (13%)	2 (3%)
Certain information in the environmental report	8 (12%)	1 (1%)	1 (1%)
Environmental report and underlying information system and the reporting process	5 (7%)	-	6 (9%)
Environmental report and environmental management	1 (1%)	-	7 (10%)
Environmental report and internal audits	1 (1%)	-	3 (4%)
Environmental report, environmental performance and management	-	-	1 (1%)
Environmental management (system)	-	-	7 (10%)
Environmental information system and/or reporting process	1 (1%)	1 (1%)	1 (1%)
Other	-	-	2 (3%)
Total	48 (71%)	11 (16%)	30 (44%)

Where more than one opinion was given on the environmental report this related most of the time to the fact that separate conclusions were given on the written statements and the data or that separate conclusions are given on completeness and accuracy. Also, sometimes separate conclusions are given relating to the fact that the environmental report complies with certain standards or guidelines. The facts of findings most often relate to environmental management or the underlying environmental information system, in addition to the environmental report. The choice for facts of findings may indicate that auditors use facts of findings in order to avoid having to give a qualified opinion. However, more research is necessary on this topic. Although the facts of findings provide considerable information that is interesting for the reader, there is usually no overall opinion. This makes it difficult for the reader to form

his/her own opinion, since this requires some audit knowledge. The environmental performance of the company itself was the topic of a conclusion only once. In fact it should be doubted whether environmental performance can be the subject matter of audit at all. The audit of environmental reports is an information audit and it is up to the readers to give an opinion on environmental performance based on the information they receive in the environmental report. Quite often (16 times/24%) reports featured comments on the environmental management. According to ISO 14001 improved environmental management should lead to improved environmental performance. In some firms a certain consistency could be found in the opinion given. For instance, SustainAbility seems to issue separate opinions on policy, management and practices on the one hand and on numerical data, and written statements made.

Other findings

Some audit report contained some other conclusions that did not actually relate to the environmental report. Examples of such other findings include:

“It is noteworthy that the professional relationships between Novartis and the regulatory authorities were reported to be very good at all sites visited and by the limited number of regulators interviewed” (SustainAbility in Novartis); and

“Tioxide’s willingness to take on board our recommendations in this and previous year is a clear indication of their commitment to continuous improvement and openness” (DNV in Tioxide).

Negatively formulated opinions

In five cases (7%) some form of negatively formulated audit opinion was given. Three times (4%) this was done in combination with positively formulated opinions. Audit firms, including co-operations between accountants and the environmental consultants of the firms, provided all the negatively formulated statements. The negatively formulated opinions in the audit report are intended to provide moderate assurance rather than reasonable assurance. However, it may be questioned whether readers of environmental reports understand such limitations in assurance. Further research in this area is necessary to identify whether intended limitations in assurance are clear for the readers.

Examples of negatively formulated opinions include:

“We are not aware of any significant HSE incidents, which were not considered for inclusion in the HSE facts” (Ernst & Young in BP)

“However, nothing came to our attention during our work that is in conflict with the information presented in the report” (KPMG in National Grid)

“Against this background we have no objection to the information in the Environmental Report” (KPMG accountants and consultants in Scan Farmek and Stara Koppabergs)

“During our investigation nothing came to our attention to conclude that the other environmental information provided in the environmental report is not presented in all material ways” (KPMG in Triodos Bank)

Despite the fact that some engagements were compilation engagements an opinion on the environmental report was nonetheless given, e.g. *“The report contains comprehensive data which in our opinion appropriately reflects the main areas of environmental impact arising from the business’ operations”* (Aspinwall & company in EMI).

In some audit reports, the heading “opinion” is used, but this does not cover the opinion on the environmental report but an evaluation of environmental management.

Recommendations

Certain findings that are beyond the scope of the engagement and/or the core-expertise of the auditor should only be reported internally, with the necessary due care. No expectation should be created that the auditor has performed an integral investigation on the topic or that the topic belongs to his/her expertise. The auditee may expect too much from the auditor and could even think next time, if the auditor makes no comments, that everything in relation to this specific topic is adequate (Wilschut, 1987b). Table 7.9 shows that in total 38 audit reports include recommendations of which 27 are rather detailed while 11 are more limited. Some (7 times/10%) include follow-up information on previous recommendations. If any are included, recommendations quite often form half of the audit report. Most recommendations relate to environmental management and the environmental information system.

Table 7.9 – Recommendations

Kind of recommendation	Total	Information	Only some information
In combination with facts of findings	23 (34%)	19 (28%)	4 (6%)
Recommendations only	8 (12%)	5 (8%)	3 (4%)
Follow up information last year	7 (10%)	3 (4%)	4 (6%)
Total	38 (56%)	27 (40%)	11 (16%)

Some audit reports refer to further discussions with management on recommendations.

Examples of such audit reports include:

“We have also produced management system review reports for each of the sites” (ERM in Cultor)

“We shall also be addressing the issues with management with a view to developing the Group’s HSE reporting processes and our verification procedures further” (KPMG and PricewaterhouseCoopers in Royal Dutch/Shell)

“We have made a number of recommendations to Glaxo Wellcome based upon our verification findings contained in separate reports. Key recommendations relate to implementing improvements in site based data verification and the internal audit process” (ERM in Glaxo Wellcome).

“We have discussed certain weaknesses in the systems for data collation, identified in the course of our work, with National Grid and have suggested ways in which the systems could be developed over time.We draw your attention to pagesin the Group Environmental Performance Report. This section sets out areas in which we have agreed with the Directors that further development collection and collation are required” (KPMG in National Grid)

Signature/name of the auditor(s)/firm

The signature or name of the audit firm provides an indication of the responsibility for the audit report. The research results in table 7.10 show that signing using the name of the auditors and firm name is the most popular (53 times/78%) form. In these cases the audit report was signed 34 times (50%) by only one auditor, 17 times (25%) by two auditors and two times (3%) by three auditors. Two audit firms signed the audit reports twice (3%). In addition, by referring to the profession an indication of the domain of the audit is given, and likewise of competence.

Table 7.10 – Signature of the auditor(s)/firm

Name of the firm	Name of the auditor	Profession	Position	Total
X	-	-	-	12 (17%)
X		X	-	2 (3%)
X	X	-	-	6 (9%)
X	X	X	-	15 (22%)
X	X	-	X	16 (24%)
X	X	X	X	16 (24%)
-	-	-	-	1 (1%)
67	53	33	32	68 (100%)

In one case there was no signature (environmental consultancy firm)

Environmental consultants (28 times compared to four times by accountants) usually stated their position. By referring to the profession, an indication of the domain from which the audit is performed is given. The research findings show that 33 audit reports (49%) refer to the profession. References to the profession were made 20 times (29%) explicitly and could be derived from the name or the logo 13 times (19%). There was a certain consistency within firms, but no actual trend within the accountancy profession or within the environmental consultancy profession was detected. Accountants and environmental consultants associated with an audit firm referred to the profession most often (23 times/34%), compared to 10 references (15%) by environmental consultants. In all cases where both the accountant and the environmental consultant signed the audit report (5 times/7%), a reference to the profession was included.

The research findings show that although auditors of many different kinds of disciplines perform audits of environmental reports, references to both professions are present in only half of the audit reports.

Ball, Owen and Gray (2000) established that companies often change auditors. Of the 12 companies with more than one verified environmental performance report in the sample, seven (58%) commissioned different firms to verify their environmental report.

The auditor's address

It may be difficult for readers to contact the auditor, since some information in relation to the address was given in only 38 audit reports (56%). Most often the place only (33 times/49%) is mentioned. A full address was only given 5 times (7%). In two cases this was due to the fact that the audit report was in the form of a letter and therefore included all kinds of contact details.

Audit report date

The purpose of stating the audit report date is to inform the users that the auditor has considered the effect on the subject matter of material events of which the auditor became aware up to that date (ISA).

A date was mentioned in 51 audit reports (75%). However, the day was not always mentioned. In the remaining audit reports (17times/25%) that do not mention any date, the auditors apparently do not attach much importance to stating up to which date they performed their audit procedures and considered any material events that may have effected the information in the environmental report.

7.3.2 The quality of the audit reports

A number of quality indicators were identified in advance (see table 7.1 in paragraph 7.2) for the analysis of the quality of the audit reports.

Completeness

The research reveals that the topics that should be included in the audit report are not complete. In particular, the addressee, the audit objectives, the level of assurance to be provided, the audit criteria and information on limitations and qualifications are missing. As such more than half of the audit reports fail to provide an adequate context for their conclusions. Table 7.11 provides an overview of the extent to which topics are included in the audit report.

Table 7.11 - Contents of the audit report

Description	Number	Percentage
Title	67	99%
Type of service	67	99%
Addressee	15	22%
Subject matter	68	100%
Audit objectives	32	47%
Level of assurance to be provided	8	12%
Responsibility of the company's management	31	46%
Responsibility of the auditor	24	35%
Audit criteria	26	38%
Audit work	63	93%
Modifications/Qualifications	9	13%
Conclusion	68	100%
Recommendations	31	46%
Name	67	99%
Address	38	56%
Date	51	75%

Comparability

The audit reports are not similar in terms of structure. Partly this is due to the lack of certain topics in the audit report, partly to the use of different headings or a different order for discussing the topics that are included.

Almost all audit reports include the scope of the engagement, the audit procedures and the conclusions, but the way they are presented varies. A few audit reports start with the conclusions. For instance, the audit report of ERM within the environmental report of Cultor starts and ends with facts of findings. The findings in the beginning form an overview of all findings. The audit report of Ernst & Young in BP states at the end that "*this statement has been prepared taking into account the guidelines of the European Federation of Accountants (FEE) Research Paper on Expert Statements in Environmental Reports*". Some environmental reports also include a note by the company on the audit engagement. The difference between the note from the company and the audit report itself is not always clear, especially not if notes of the reporting company itself are included in the audit report (this was found to be the case on two occasions). The audit reports of Dames & Moore in ENI and of KPMG/PricewaterhouseCoopers in Royal Dutch Shell are take the form of a letter to the readers of the report or to the company itself, respectively. The briefest audit report is the one

by Ernst & Young Management Consultants in the environmental report of Rockwool. In this environmental report a copy was made of a letter of the auditor that consisted of only one sentence in which the opinion is described.

There are not only differences in structure but also differences in the description of the topics. Even when the engagement may appear to be the same the conclusions can still be described differently. This lack of consistency in the conclusions within firms that have different clients can be found in the audit reports of KPMG Certification. They audited both Otto Versand and Volkswagen. In both cases the German Guidelines on the examination of environmental reports were used and both times the audit reports nonetheless differed (Otto Versand: “*provides in all important aspects a suitable representation of the effects of this company’s activity*”, Volkswagen: “*the ER adequately presents the direct environmental impact of the Company’s activities during the 1996 financial year*”). Audit reports from previous year were received from some companies and it although they changed auditor the audit report still remained almost the same. These findings may suggest that the company has great influence on the wording of the audit report.

Faithful representation

Consistency between the title in the audit report and the engagement performed and the consistency between the scope of the engagement, the scope of the audit procedures and the scope of the conclusions increases the faithful representation of the audit report. The research results show that numerous comments can be made on the faithful representation of the audit report. First, the lack of consistency between the title of the audit report and the type of engagement performed may give readers a wrong impression. Secondly, the lack of consistency in the scope of the engagement, audit procedures and conclusions may give the impression that the conclusions relate to a much broader scope than they actually do, given the kind of audit procedures performed. A wrong impression is also given as a result of a lack of an appropriate description of the inherent and specific limitations to the reliability of the data.

- *Consistency between the title of the audit report and the engagement performed*

The title of the audit report is not always consistent with the type of the engagement. Although environmental auditors in three cases called the engagement a validation this related to a compilation in two cases and to a review in combination with consultancy in the other. Obviously the term ‘validation’ is used to refer to an engagement in which assistance is provided in the compilation of the environmental report. This is however confusing, since the term is also used in EMAS to indicate compliance of the environmental report with the EMAS requirements for environmental reports and environmental management systems. In addition, assurance is also provided on the accuracy and completeness of the reports in the compilation engagements (British Steel, EMI and Scottish Power). In one instance the engagement not only included compilation, but also verification and an evaluation of environmental performance and management (Deutsche Shell). Besides audit, verification, review and agreed upon procedures, other terminology is used, maybe to distinguish

traditional financial audits from engagements in which assurance is given on environmental reports. KPMG for instance termed the engagement at the ING bank an investigation. The word 'examination' was most often used by KPMG, probably mainly in accordance with the principles for examining environmental reports developed by the IDW in which the engagement is referred to as examination. The word 'audit' was not only used by accountants, but also three times by EMAS auditors (DNV, KPMG Certification and the Danish Standards Association). Verification and validation are used in EMAS. Lloyd's, however also used this name for a non-EMAS engagement.

Also, within firms there seems to be little or no consistency regarding the title of the audit report and the reference to the type of engagement. The inconsistent use of titles and names is very confusing for users.

- *Consistency in scope of the engagement, audit procedures and conclusions*

Reading the audit reports in detail revealed that the majority of the audit reports (52 times/76%) contained some form of scope limitation. In these reports the scope limitation was expressed 41 times (60%) only in the conclusions or facts of findings. 16 audit reports (24%) appear to contain no scope limitation at all, while their description of the audit procedures is so limited that one cannot identify whether the sample has been representative or whether the reliability of the source data was also subject to audit.

The scope limitations are not always clear. The greatest difficulty relates to identifying the limitation in scope of the reliability of the source data within the sites. Although the description of the subject matter or audit procedures only stated 8 times (12%) explicitly that certain sites or site-information was not covered (4 times positive, 3 times negative and once both positive and negative), the limitations were much more extensive. From reading the description of the audit procedures performed showed that in 25 additional cases (37%) certain scope limitations were presented in the evidence collection that are not obvious for the reader unless they have specific audit knowledge. This was due to the following reasons:

- no indication of sites audited or the source data was not subject to audit (12 times/18%);
- a non-representative sample of sites (9 times/13%), including 3 cases in which in addition the reliability of the source data was not subject to audit;
- limited audit procedures on the reliability of source data (e.g. only interviews or based on internal audit findings) (3 times/4%); and
- limitations in evidence collection on sites or topics (1 time/1%).

If the purpose of auditing is not only to provide assurance but also to improve the content and quality of accountability, the audit objective 'completeness' in particular is very important. Yet reading the opinions shows that assurance is not always given on completeness in particular, while it is not excluded from the scope of the engagement.

- *Explanation of the inherent and specific limitations of the reliability of the data*

Although the reliability of the data is subject to certain inherent limitations and environmental reporting processes and the underlying information systems are still developing, some form of limitations was mentioned only 17 times in audit reports, of which 8 relate to inherent limitations and 9 qualifications are due to more specific limitations.

Prudence

The research results show that the conclusions are more carefully worded than those from 1994/95 presented in chapter 3. However, the wording fairly presents or fair and honest were still used in 8 audit reports (12%), by both accountants and environmental consultants. In two other audit reports (3%) the wordings “*accurate, balanced and true ..no misleading presentation and no significant environmental issues omitted*” were used or “*complete, understandable and reliable*”. Also, in two audit reports a different kind of wording is used, “*adequate view*” in the audit report on Danish Steel Works by KPMG and “*adequate picture*” in the audit report of Danfoss by KPMG. All other audit reports provide separate conclusions on accuracy and completeness or accuracy only or are limited to certain topics or sites visited. Others exclude the reliability of the source data.

Neutrality

Value statements were found in six audit reports. Examples of such value statements include statements such as “Novo Nordisk continues to be a leader in the biotechnology industry” or “In our, opinion Neste continues to be a leader in voluntary corporate environmental performance reporting world-wide, as well as a leader in the oil and gas sector”. Most of the value statements however were given in relation to the assessment of environmental performance. This confirms that conclusions of the audit and those of the assessment need to be presented in separate sections. Example of such value statements include:

“High standards have been set for Neste’s North American operations...Safety performance was found to be very good overall...one of the sites was very impressive in relation to EHS” (SustainAbility on Neste).

“The system for controlling the use of hazardous materials within the Engineering division is exemplary” (Aspinwall & company in British airways).

“The well established environmental audit programme has an important role in assessing achievements in environmental performance and progress towards the targets. British Steel has committed substantial resources to research...” (Aspinwall & company in British Steel).

“... and an impressive emergency management system is in place...Performance measurement and monitoring in general was impressive” (SustainAbility in Novartis).

“As the verifier we are impressed with the quality and motivation of the staff at the locations visited particularly their commitment to continual improvement” (SGS Yarsley in Biffa).

Also, a certain bias exists in reporting the good and the bad news in facts of findings. For instance in the audit reports of Sustainability in the environmental reports of Novo Nordisk and Neste half the audit report consists of describing the ‘best practice’ of these companies.

Kolk (2000) assessed the neutrality of audit reports based on the wording in the audit report that may be classified as subjective. Of the 43 audit reports in her sample, 40% contained subjective information. There was a certain relationship with the type of the engagement. If the engagement included both audit and evaluation (30% of the cases of which 21% was subjective and 9% neutral) there was more subjectivity in the audit report (70% of which 19% subjective and 51% neutral).

Understandability

The use of different subheadings increases the understandability of the audit report. In 28 of the audit reports (41%) subheadings were used. If included, subheadings differed and the research results showed that there was no actual consistency within firms. A similar structure of the audit report together with similar subheadings however would increase both the comparability and the understandability of the audit report. It is also very difficult for users to interpret the audit procedures performed. Yet, only 17 of the audit reports (25%) state the purpose of the audit procedures, of which 6 times (9%) do so in some detail.

Relevance

The audit reports show that a clear distinction has to be made between audit and assessment. At present, some engagements seem to cover both. For the reader, it may be unclear that some audit reports also include an assessment of environmental performance or environmental management and others do not. The distinction is even more unclear for users since some audit reports that include only an audit of the environmental report also include recommendations. Further, it remains unclear for the readers what the consequences are of such findings for the conclusions, often previously mentioned, of the audit. Some audit reports seem to be very lengthy (up to 1100 words) but this is mainly due to the description of the assessment of environmental performance or environmental management. Presenting the assessment separately would make the actual audit report more concise.

Another finding was that the audit reports contain little or no information that could also be included in the environmental report itself.

Timeliness

The date of the audit report indicates the date up to which the responsibility of the auditor extends. Any events up to this date that may affect the information presented in the environmental report and the view provided by this information should have been included. If there is any discussion on the reliability of the environmental report that might even lead to

lawsuits the date becomes very important. Yet in 17 audit reports (25%) no date was included. Also, the day is often not stated.

Credibility auditor

The credibility of the auditor may be enhanced by a reference to the independence of the auditor, to his/her competence and to the audit standards used.

- *Reference to the independence of the auditor*

In order to increase confidence in the objectivity of the conclusions presented in the audit report, auditors may choose to refer explicitly to their independence. In a total 24 cases (35%) some form of reference to the independence of the auditor was made, mostly by environmental consultants. However, such a reference was also made three times in the audit reports of audit firms. Both KPMG and Ernst & Young state once in their audit report that their objective was to form an independent opinion. In one case, an introduction to the engagement by the client itself was included in the audit report. In this introduction, reference was also made to the independent review (KPMG in the environmental report of ICI). In most cases (12 times/18%) a reference was made to the independent engagement. Although auditors claim to be independent, sometimes this may be debatable. The audit reports on British Steel, EMI and Scottish Power (all Aspinwall) provide examples of this lack of independence. Although this relates to a compilation engagement, and they state that they have assisted British Steel and EMI with the planning and compilation of this report, they also state that their judgements on the environmental report are made from an independent and objective standpoint. In the case of the environmental report of Scottish Power they provided environmental consultancy advice in the planning and the production of the environmental report and a corporate environmental governance review.

“As a result of our involvement in these activities we are in a strong position to evaluate Scottish Power’s environmental management performance and form judgements on the accuracy and completeness of this report. Our judgements have been formed from an independent and objective standpoint, but we have not carried out a formal verification of statements and quantitative data within the scope of the validation. This has been conducted through internal verification audit which we are satisfied has been robust and covered all significant areas within the scope of this report”.

Although the auditor may be independent from the auditee there is still another independence issue to be resolved. In the engagements themselves conflicts of interest may occur that influence the independent opinion of the auditor. The audit reports on the environmental reports of British Airways, Unilever, Thames Water and Yorkshire Water make it clear that the auditors were not involved in the preparation of any part of the environmental report (all Aspinwall). However, the same environmental consultants seem to forget that you cannot audit your own recommendations.

Some audit reports do not refer to the independence of the auditor but seem to demonstrate the opposite, namely that the auditee has considerable influence on the whole audit process. The

audit report of Ernst & Young in Statoil states: “*as instructed by the company, our review has been conducted as follows...*”. This can be seen as a major interference with the objectivity of the investigation. A similar comment can be made on the audit report of Coopers & Lybrand in IVO: “*The management of IVO commissioned us to perform the procedures set out below...*” (even though it is referred to as a review and not an agreed upon procedures engagement).

Comparing the references to independence with the kind of auditors it is clear that certain environmental consultants seem to refer at all times to their independence (Aspinwall (10), ADL (2), Entec (3). Certain audit firms never refer to their independence (Deloitte & Touche (7), PricewaterhouseCoopers (3). KPMG seems not to refer to it most of the times (16 out of 18). Also, Sustainability does not refer to independence either.

Given the fact that so many different auditors are working in this field and not all of them work according some kind of code of conduct and the fact that independence is very important for the users of audit, the accountants might consider to refer to the code of conduct they comply with.

Ball, Owen and Gray (2000) judged in their research that 64% of the audit reports provided by accountants and 44% of those provided by environmental consultants were independent. They based their findings on references to consultancy in the audit report.

A fundamental problem is that the agent (the reporter) commissions the auditor rather than the principal (the constituency of the environmental report). Under these arrangements, it is the agent and not the principal who has control over the scope of the audit (Ball, Owen and Gray, 2000). They suggest that audit may, therefore, be a spin-off from an existing relationship between the reporter and the auditor, or that the audit may be negotiated as part of a package of managerial services provided in a consultancy relationship. In my opinion, this emphasises the fact that the supervisory body probably is best suited to issue the audit engagement, since auditing forms part of their supervisory task (see also chapter 3).

- *Kinds of auditors and competence*

There are a number of different possibilities for the audit of environmental reports. As for example KPMG and PricewaterhouseCoopers in Royal Dutch/Shell state :

“We have not yet resolved how assurance can be best achieved. There are a number of possibilities, including: the use of the traditional auditor who are developing their expertise in this area; the use of new firms who specialise in this form of assurance; inviting non-governmental and other organisations to review specific areas of the Group’s activities; or a mixture of the three. We will explore all of these options.”

In total, audits were performed 33 times (49%) by accountants and/or environmental consultants of an audit firm, 34 times (50%) by environmental consultants and once (1%) by a scientist.

The audit reports 15 cases (22%) of some form of co-operation between accountants and environmental consultants. This was done once by including two audit reports in the environmental report, one from an accountant and one from an environmental consultant. They received separate but complementary audit engagements. In five audit reports from accountants a reference was made to the co-operation between accountants and consultants. Examples include:

“We have reviewed, together with the Environmental Unit of Coopers & Lybrand in Sweden, the IVO Group Environmental Report” (Coopers & Lybrand in IVO);

“Together with KPMG Environmental Advisors (UK), we have reviewed the basis of the Kemira Group Environmental Report” (KPMG in Kemira);

“We conducted our review using a multi-disciplinary team of environmental specialists and auditors, in order to assess....” (KPMG in The National Grid Group and Imperial Chemical Industries);

“We made use of environmental experts where appropriate and, in addition, they confirmed that the parameters disclosed form a reasonable and balanced set of indicators for the Group’s HSE Performance (KPMG and PricewaterhouseCoopers in Royal Dutch/Shell).

Further both an accountant and an environmental consultant of the same audit firm signed five audit reports without any reference to the responsibilities of each. In all these cases the name of the audit firm was also mentioned.

In one case, the audit report was signed only by the firm name indicating Environmental Auditors and Chartered Accountants, although the signatures came from two accountants (KPMG Certification).

An environmental accountant of a separate eco-audit department of an audit firm signed the audit report twice. Some audit firms tend to have a separate division with limited liability.

Twice it was not obvious whether there was a multidisciplinary team. In these cases the audit report was signed using the name of the audit firm without the addition ‘accountants’, although they did use this addition in other engagements. This may suggest that the firm as a whole is responsible for the quality of the audit and includes all the expertise necessary in the audit team.

Increasing the confidence in the conclusions by emphasising that a multidisciplinary team was involved that has both subject matter knowledge and audit knowledge was done in a minority of the audit reports (22%), all by audit firms.

- *Reference to audit standards*

The auditor can show his/her professionalism by referring to audit standards. Although there are no generally accepted standards for auditing environmental reports yet, the results in table 7.12 show that a reference to audit standards was included 21 times (31%). Four times this concerned a reference to generally accepted guidelines/standards/principles for auditing (Danfoss, DSW, Novo Nordisk, Shell), Forum (ENI), Internal Guide (KPMG), 3 times IDW (Otto, Scan Farmek, Volkswagen). Once there was a footnote to EMAS in National Power. In Germany the Institut der Wirtschaftsprüfer (1999) has prepared a standard for the examination of environmental reports. The references to generally accepted guidelines or standards were all made by accountants and/or environmental consultants of audit firms. In three cases such environmental consultants stated, if adapted IAS were used, that accountants approved the verification programme. Environmental consultants referred to ISO, EAG and EMAS. Once a reference was made to the guidelines issued in a draft prepared by the Forum on Environmental Reports Certification that had several meetings at FEEM. The guidelines were based on the FEE Research paper on Expert Statements in Environmental Reports.

Table 7.12 – Reference to audit standards

Kind of reference	Number
International standards on auditing	5
International standards on auditing adapted	5
Generally accepted standards for the examination of environmental reports by IDW	3
Generally accepted principles	1
Forum Environmental Reports	1
Generally accepted standards for auditing environmental reports	1
Generally accepted guidelines for reviews of green accounts	1
Internal guide audit firm	1
ISO 14010/11	1
ISO 62, EAG 7/02	1
EMAS	1
Total	21

None of the audit reports referred to a code of conduct.

The research results show that not much attention is paid yet to increasing the credibility of the auditors that provide the conclusions. The independence of the auditor is not properly addressed yet. A similar conclusion may be drawn in relation to appropriate competence (reference to multidisciplinary teams) and to professional audit standards.

7.4 Conclusions and implications of the current practice for the framework of environmental reporting

The audit report represents an opinion on the information that reflects actual environmental performance. The audit report is intended to add credibility to environmental reporting. Whether it actually adds to the credibility will not only depend on the quality of the audit procedures performed and evidence obtained but also on the confidence of the users in the auditor. The audit report should be clear for the users and should not create greater expectations than can be justified based on the audit work performed and the expertise of the auditor and/or audit team. Therefore an audit report should comply with certain quality requirements. The research in this chapter was aimed at obtaining evidence on the way audit reports were worded and the extent to which they comply with general quality requirements for information.

a) Wording of the audit reports:

The audit reports have different titles. The most popular forms are the reference to the auditor (report by ...) and the reference to the kind of the engagement (e.g. verification statement). A number of different names are used for the engagement itself. The most popular are 'verification' (26%) and 'review' (22%). The names used in the scope description however are not always consistent with the name in the title. The description of the engagement relates not only to audits, but also to audits and assessments (31%), for example of the environmental management system, the reporting process or even the environmental performance. Where audit reports refer to the addressee (22%), there is no consensus. The board of directors, the company and the users are mentioned. If they are described at all, the subject matter and audit objectives are, except in 4% of the audit reports, described in a positive way only. Only 12% of the audit reports, all from accountants, refer to the level of assurance. Although they are very important for the interpretation of the conclusions, only 38% of the audit reports state the audit criteria that were used. 76% of the audit reports contained some form of limitations in the scope of the engagements, which however are described in different sections of the environmental report and are therefore difficult to identify. Most audit reports (93%) provide information on the audit procedures. Whether this forms a sound basis for the conclusions may be questioned since only 46% refer to site visits of which 4% describe how they have selected a representative sample. 25% of the audit reports refer to limitations in the reliability of the data of which 12% as a result of limitations inherent in the subject matter and 13% as a result of specific limitations, mostly owing to an insufficient environmental information system or internal controls. Auditors appear to choose to issue facts of findings rather than audit conclusions to avoid having to issue a qualified audit report or even a disclaimer of opinion. 44% of the audit reports mention facts of findings. Auditors also prefer to express recommendations rather than limitations on the reliability of the data. 56% of the audit reports provide recommendations of which 34% in combination with facts of findings. In 7% of the audit reports, the conclusions are described in a negative way. It may however be questioned

whether it is clear for readers that this implies that a lower level of assurance is given. Although many different experts audit environmental reports and therefore information on the background of the auditor(s) is useful, only 49% of the audit reports provide some information on the expertise of the auditor. Only 75% of the audit reports are dated. For the other audit reports users are unaware until which date subsequent events were taken into account.

b) Quality of the audit reports

Completeness: The research results provide evidence that some topics are not always included in the audit report, such as the addressee, the audit objectives, the level of assurance to be provided, the audit criteria and the information on qualifications. As such more than half of the audit reports fail to provide an adequate context for the audit conclusion.

Comparability: The audit reports are not similar in terms of structure. This is not only due to the lack of certain topics in the audit report, but also because different headings and a different order for describing the various topics were used. Also, the content for each topic varies.

Faithful presentation: The majority of the audit reports contained some form of scope limitation (76%). The description in the other 24% audit reports was only very brief, but no explicit scope limitation was mentioned. Users of audit do not gain an adequate insight into the scope of the engagement and as such may misinterpret the findings. The scope of the audit reports is usually (except in three audit reports) described in a positive way only. Consequently the user does not know what has not been done. The risk of misinterpretation is increased by the fact that a description of any limitations and qualifications is missing most of the time. Of the audit reports that contained some form of scope limitation (76%), the conclusions or facts of findings were limited in only 60% of the audit reports. The limitations were not described separately but had to be identified from the positive description of the conclusion and the audit work performed. The limitations, especially in the description of the audit procedures, are not obvious to the users unless they have specific audit knowledge. Consequently readers may not always identify the limitations, and the limitations caused by not having audited the reliability of the source data in particular may be very difficult to identify for users. Also, in 6% of the audit reports the title of the audit report did not comply with the engagement described in the audit report.

Prudence: The conclusions of some audit reports still provide too much assurance. The wording 'fairly presents' or 'fair and honest' was still used in 12% of the audit reports although there are still no generally accepted reporting principles for what constitutes 'a fair view'. In 6% of the audit reports variations of these wordings were used.

Neutrality: For some audit reports, the objectivity of the auditor may be questioned. In 9% of the audit reports value statements were found without any reference to any criteria and/or benchmarking used.

Understandability: In 41% of the audit reports subheadings were used to increase the understandability of the audit report. For users it is further very difficult to interpret the audit procedures performed. Yet only 25% of the audit reports state the purpose of the audit procedures, of which 9% do so in some detail.

Relevance: It may be questioned whether all information in the audit report is relevant to the adequate interpretation of the conclusions, for example the results of the more subjective assessments of environmental policy, environmental management and environmental performance. But the inclusion of recommendations may also be questioned. If relevant, they are presented as qualifications in the audit report.

Timeliness: 25% of the audit reports do not mention any date, which leaves users with the uncertainty up to which date subsequent events were taken into account.

c) Areas for improvement

Although they showed clear improvement compared to the audit reports of 1994 and 1995, the audit reports investigated in this chapter still differ greatly and do not comply with quality requirements for audit reports. Therefore not many examples of ‘good practice’ could be identified. However, there are some lessons to be derived from the existing practice. The major areas for improvement include the following:

- Include structure/headings in the audit report.
The audit reports that contained several headings were much easier to read. The inclusion of headings also seemed to provide a more structured presentation of the audit report and increases the comparability of the audit reports;
- Be consistent in the scope, audit procedures and conclusions.
Many audit reports still display a lack in consistency between the description of the scope of the engagement, the audit procedures and the conclusions. This may create an expectations gap. Any scope limitations should be described in the section on the scope of the audit and not in the section audit procedures or even in or after the conclusions;
- Explain uncertainties and limitations in evidence and consider qualifications.
If uncertainties or limitations in the evidence collection occur one should consider a qualification or disclaimer rather than presenting facts of findings and leaving the reader in ignorance regarding any uncertainties. At present, audit reports often present certain facts of findings rather than a conclusion on the report with qualifications. In this way they can present their findings, despite the fact that there are limitations and uncertainties, in a positive way. This situation however is misleading for users.
- Provide a complete view of the scope of the engagement.
It is currently very difficult for users to assess whether the audit covers the whole environmental report. By describing both what has been subject to audit and what has not been subject to audit (taking the whole environmental report and the process from obtaining source data until reporting as the norm) the readers gain some insight into

the completeness of the subject matter of the audit. The audit objectives and audit procedures can be described in a similar way. Auditors have to consider at all times whether or not an audit engagement that is not full scope is not misleading to the users.

- Report no value statements.

Certain audit reports still contain value statements, such as personal judgements by the auditor. Since these statements are not substantiated with proper evidence they should be avoided.

- Refer to a code of conduct in order to substantiate the auditor's independence
An audit report can only add to the credibility of the environmental report if users have faith in the auditor. The auditor's independence plays an important role in this. The auditor can explain his/her independence to the readers by referring to the code of conduct with which he/she complies. This also enables users to obtain more information on independence if they wish.

- Provide no opinion on accuracy and completeness in compilation engagements.
Compilation engagements are intended to provide assistance in compiling the environmental report. Although users of the environmental report may derive some benefit as a result of an expert's involvement, these engagements are no audit and therefore not intended to provide assurance. Providing opinions on accuracy and completeness therefore is misleading and should be avoided.

- Refer to audit standards.

Performing an engagement in accordance with audit standards shows the professionalism of auditors. Even though there are still no generally accepted standards on auditing environmental reports there are general audit standards on assurance engagements to which accountants can refer, such as ISAE 100 (IFAC, 2000).

- Refer to reporting policy and reporting process as described in the environmental report, including a description of the limitations of the data.
The description of the reporting policy and the reporting process is important for the accurate interpretation of the data. In addition it describes the limitations inherent in obtaining the data. Given its importance for the reliability of the environmental report, the audit report should refer to the reporting policy described in the environmental report.

- Audit report for full scope audit and audit report for limited scope audit
At present many different terms are used for auditing environmental reports, sometimes with the purpose of distinguishing between engagements that provide different levels of assurance. However this is very confusing for users. This confusion is increased further by a lack of consistency in using terminology. For users, it may be clearer just to use a full scope audit and a limited scope audit. The kind of limitation in the limited scope audit should be properly explained. Limitations may occur in the subject matter, the audit objectives and the audit procedures performed. The research shows that only accountants refer to the level of assurance provided. Despite the fact that accountants always refer to a high or a moderate level of assurance, the level of

assurance is in principle a gliding scale. The level of assurance that is provided in a full scope engagement should preferably be the highest level of assurance possible. The type of subject matter and the quantity and quality of evidence obtained and the strength of the audit criteria limit the level of assurance provided. There is however a distinction between the general limitations in the level of assurance that relate to all environmental reports and those that are specific for auditing a particular environmental report.

- Report the findings of an additional assessment not in an audit report but in a separate assessment report or at least in separate sections of the audit report. At present the difference in audit reports is caused also by the fact that some audit reports not only contain the audit findings but also provide an assessment of environmental policy, environmental management or environmental performance. In order to add to the comparability of audit reports the scope and results of such assessment should be reported in separate assessment reports. Further, auditors always have to assess whether the combination of auditing and assessing does not compromise their independence.

These areas of improvement identified in existing audit reports are taken into account for the development of the framework in the next chapter.

Chapter 8 A framework for auditing environmental reports

8.1 Introduction

Based on the research results of the exploration of the field of auditing environmental reports, certain characteristics of environmental reporting and auditing can be identified, including:

1. *Accounting*

- No generally accepted guidelines are yet available for environmental reporting, even with the Dutch mandatory requirements for environmental reporting;
- Recordings are made in different ways, both on an ad hoc basis and an ongoing basis, but in general no generally accepted conventions for measurements exist;
- In regard to registrations of environmental effects, the accuracy of the data varies;
- Recordings are made in physical units, but there is a lack of uniformity in the choice of the basis of measurement;
- No generally accepted conventions yet exist for the presentation of the various environmental effects into a single global environmental impact indicator;
- Negative environmental effects have a negative value, they create undesirable social costs. However, as yet no generally accepted system exists for relating these negative effects to the actual costs incurred in restoring the damage. Most costs are simply passed on to society;
- No generally accepted conventions yet exist in relation to the valuation of positive contributions made to the environment;

2. *Auditing*

No generally accepted standards for auditing environmental reports are yet available;

- The concept of materiality has a different application and depends, amongst others, on the impact an environmental effect may cause. In addition, the possibility exists that a certain effect may not be material, but that a combination of certain effects may be very material given the impact they may cause;
- In comparison with the actual quantity of production or goods or services, the quantity of the environmental effects is often very small. This hinders or complicates certain available audit methods and techniques;
- Audit evidence is mainly obtained within the organisation itself, few external sources are available;
- The risk of management override exists due to the possibility of litigation claims;
- If a relationship exists between the environmental effects and the production or service activities of the organisation, the audit of financial statements can add value to the audit of environmental reports, especially in relation to the completeness of the related service or production quantities.

Some of these characteristics are fundamental, others exist only because of the fact that environmental reporting and auditing is still in an early stage of development. Research by

GEMI/IRRC (1996) amongst stakeholders suggests that there is no clear overall consensus on the type of firm, combination of skills, or individuals that would be best qualified to give an informed, yet independent, audit report on a corporate environmental report. The study indicated that stakeholders believe that the system for auditing financial information in annual reports by audit firms functions reasonably well, as a result of widespread faith in the accounting/auditing standards and the ability of potentially aggrieved parties to sue audit firms for misrepresentation. However, respondents to the study expressed doubt about the potential for auditing to add value to environmental reports until clear audit standards are agreed upon.

In this chapter the elements of the general theory of auditing are discussed from the perspective of auditing environmental reports. The purpose of auditing, the postulates and elements of auditing, as described in chapter 3, are evaluated in the context of auditing environmental reports.

Before going into detail, paragraph 8.2 describes the meaning of the postulates for the audit of environmental reports. Paragraph 8.3 and further describe the specific considerations in relation to the elements of auditing: the domain of the audit (8.3), the auditor (8.4), the subject matter of the audit (8.5), the objectives of the audit (8.7), the audit criteria (8.6) and evidence (8.7). Paragraph 8.8 provides the summary and conclusions.

The description of the audit process given in this chapter is more detailed than that of previous chapters. The aim of this thesis is to develop a first initiative towards an overall framework for the audit of environmental reports. A detailed description of the audit process in these earlier chapters would have distracted the attention from the fundamental issues. In the previous chapters, especially 6 and 7, evidence was obtained for the description of the audit process. Additional data for the description of the audit process in this chapter was obtained in discussions with the environmental consultancy department of an audit firm. This is discussed further in paragraph 8.9. The annexes to this chapter include more detailed procedures and examples of audit reports.

8.2 Theoretical foundations of the framework

In this paragraph, the general purpose of auditing of environmental reports is discussed. In addition, based on existing literature, the interpretation of the general postulates of auditing in the context of environmental reporting is explained.

In the definition of auditing as used in this thesis the general purpose of auditing is described as:

forming and reporting a professional judgement on the degree of correspondence between the subject matter and agreed audit criteria.

In the most ideal situation, the subject matter on which this kind of assurance is required and the audit criteria are defined by the users of audit.

As described in chapter 3, auditing is related to the concept of accountability. The exact purpose of auditing therefore can be described only in a dialogue with the actors in the relationship of accountability. To describe the theoretical foundations of the framework for environmental reporting certain assumptions are made. Based on the results of empirical research it can be further specified as to whom, when and where these theoretical foundations are valid.

Below, the interpretation of the postulates, as discussed in chapter 3, for the audit of environmental reports is discussed³⁸.

1. *A primary condition for an audit is the existence of a relationship of responsibility and the related duty of accountability between at least two parties.*

For years, the natural environment has been viewed as a free resource to be used to provide goods and services. Organisations are now expected to be accountable for their environmental stewardship, however, and to operate in a manner that: minimises adverse impacts on air, water, land and habitats; restores renewable resources; conserves non-renewable resources; and recycles materials to the greatest extent possible. Further they are accountable to more than the traditional financial stakeholders (that is investors and creditors). New emerging stakeholders include employees, communities, suppliers, customers, environmental groups, and other interested organisations (CICA, 1994). Certain companies have taken this responsibility and signed up to certain environmental charters such as the Valdez principles as issued by the Coalition for Environmentally Responsible Economies (CERES, 1989), the CEFIC principles (CEFIC, 1993) and, more recently, the OECD principles for multinational organisations (2000) and UN Global Compact (2001). Although certain organisations already voluntarily acknowledge their responsibility towards the environment, all organisations have such a responsibility and the duty of accountability. Society has a right to this kind of information. Accountability is related to the rights to information of a participatory democratic society, which is conceived of in terms of a neo-pluralist structure (Gray et al., 1997, 1996). The 1992 United Nations Conference on Environment and Development declaration, Agenda 21, includes this principle of access to information by individuals. In the European Union this right was emphasised in the Council Directive on freedom of access to information on the environment (EC, 1990), also known as the “Right to Know” Directive, which aims to set a minimum uniform standard in relation to openness for environmental information.

The accountability relationship between an organisation and its outside world may be conceptualised in three different forms:

- a) A stakeholder perspective: Organizational-centred stakeholder theory is concerned with how the organisation manages its stakeholders (all groups or parties who are influenced

³⁸ Piet (1993, 1992) provides a brief description of the postulates of Flint (see chapter 3) and the elements of auditing for the environmental audit.

by and/or who influence the organisation). Stakeholders are taken as a starting point. This model of stakeholder theory, is however, relatively silent on how the organisation does-if at all-monitor and respond to the needs of its stakeholders and struggles to maintain anything other than an organisation-centred legitimacy. Whilst the various stakeholder groups may be defined with a fair degree of objectivity, who (other than the organisation) is left to define the priorities amongst the stakeholders and the information that should be disclosed to each one? (Gray et al. 1997, 1996). The information disclosed to the stakeholders is influenced by the power of these stakeholders. Due to an uneven distribution of power of the various stakeholders, certain (groups of) stakeholders, being those that the company perceives as being, relatively, more important will receive more and better information (Maunder and Burritt, 1991). This again, will reinforce their power.

- b) An accountability perspective: Accountability is concerned with the relationships between groups, individuals, organisations and the rights to information that such relationships entail. Accountability is the duty to provide an account of the actions for which one is held responsible (Gray et al., 1986, 1987, 1988, 1991, 1996). The nature of the relationships- and the attendant rights to information- are contextually determined by the society in which the relationship occurs. The most obvious manifestation of this is statute law and standards established by statutory bodies. In addition, other mechanisms such as voluntary codes of practice exist. Disclosure is derived from the established accountability relationships and seeks to provide information to which the stakeholders have rights.
- c) A polyvocal citizenship perspective: this approach is built around stakeholder dialogue (Zadek & Evans, 1993) and its essence lies in providing each of the stakeholders with a voice in the organisation. Focus groups are held with each stakeholder group, from which key issues are identified and a wider constituency of the stakeholder group is consulted to collate their views on these and other issues. The resulting social account comprises, predominantly but not exclusively, a reporting of the voices of the stakeholders so that their systems of interpretation and meaning and processes of structuring and organising are revealed (silent stakeholders, such as future generations, however, have no voice).

The polyvocal citizenship perspective is the approach as adopted in the case of a social audit. Environmental reports collected during the period covered by the research for this thesis (1994-1997) were from both the organisation-centred stakeholder perspective and the accountability perspective. Only in the case of the more recent triple-bottom-line³⁹ reports are published that have a polyvocal citizenship perspective adopted.

Some organisations make an inventory of their stakeholders' needs. In addition, some organisations sign up to certain voluntary codes and acknowledge stakeholders' rights to information (accountability perspective). In each case, however, it is the organisation on which retains control over the ultimate decision on the kind of information to include and on

³⁹ Triple-bottom-line refers to reporting by companies on aspects of economic, environmental and social performance (people, planet and profit). These reports are also referred to as sustainability reports or corporate social reports.

the ways of presenting this information. Even the Dutch Environmental Management Act on mandatory environmental reporting, organisations still have considerable freedom in the reporting of information, especially in the ways of presenting that information. Stakeholders have a right to environmental information. If their power however is insufficient to obtain this information, eventually laws and regulations should endorse this right.

2. *In addition to 1, a further condition for the audit is that:*

- *there is a possibility for a (perceived) conflict of interest; and*
- *the subject matter of accountability is of too great significance for the discharge of the responsibility duty to be demonstrated without the process of audit; and*
- *the subject matter of accountability is too remote and/or too complex for the discharge of the responsibility duty to be demonstrated without the process of audit.*

The perceived conflict of interest of an organisation's management is an important reason to provide the engagement to audit environmental reports. Due to possible litigation or in order to influence the users' perception of the image of the organisation, the information in the environmental report may be biased. In addition, the subject matter of accountability, being the reflection of the organisation's environmental performance, is too significant for the discharge of the responsibility duty without the process of audit. Society has a right to a true and fair view⁴⁰ of environmental performance. Evidence as to the reliability of the organisation's reported environmental performance is mainly available within the organisation itself. Stakeholders, however, have no access to this evidence. In addition, the process of collection and evaluation of evidence is too complex to be performed without specific competences. In my opinion, stakeholders have a very valuable input in defining the subject matter of the audit, the audit objectives, the audit criteria and the way of reporting the audit judgement, but they are, given the complexity of the subject matter, incompetent to perform the audit process themselves. At the present time, however, organisations, generally speaking, have little dialogue with stakeholders in relation to the previously mentioned issues. There is no accountability without supervision (Wilschut, 1998). In principle, the supervisory board⁴¹ monitors the responsibility given to the senior management of the organisation. The supervisory board can engage the auditor to assist in the process of monitoring the quality of the organisation's accountability (Wilschut, 1998). It is for this reason that the supervisory board, rather than senior management itself, should grant and supervise the audit engagement. The supervisory board should reflect the variety of the organisation's stakeholders and therefore should not only include representatives of the organisation's shareholders, but all

⁴⁰ As described in chapter 1 at this moment without generally-accepted standards for environmental reporting and proper stakeholder dialogue it will not be possible to provide a true and fair view but rather a balanced view with data being reliable.

⁴¹ Or board of non-executive directors in the case of US and UK companies

stakeholders involved in the accountability relationship. Stakeholder groups include, amongst others, shareholders, local community, customers and users, suppliers and employees.

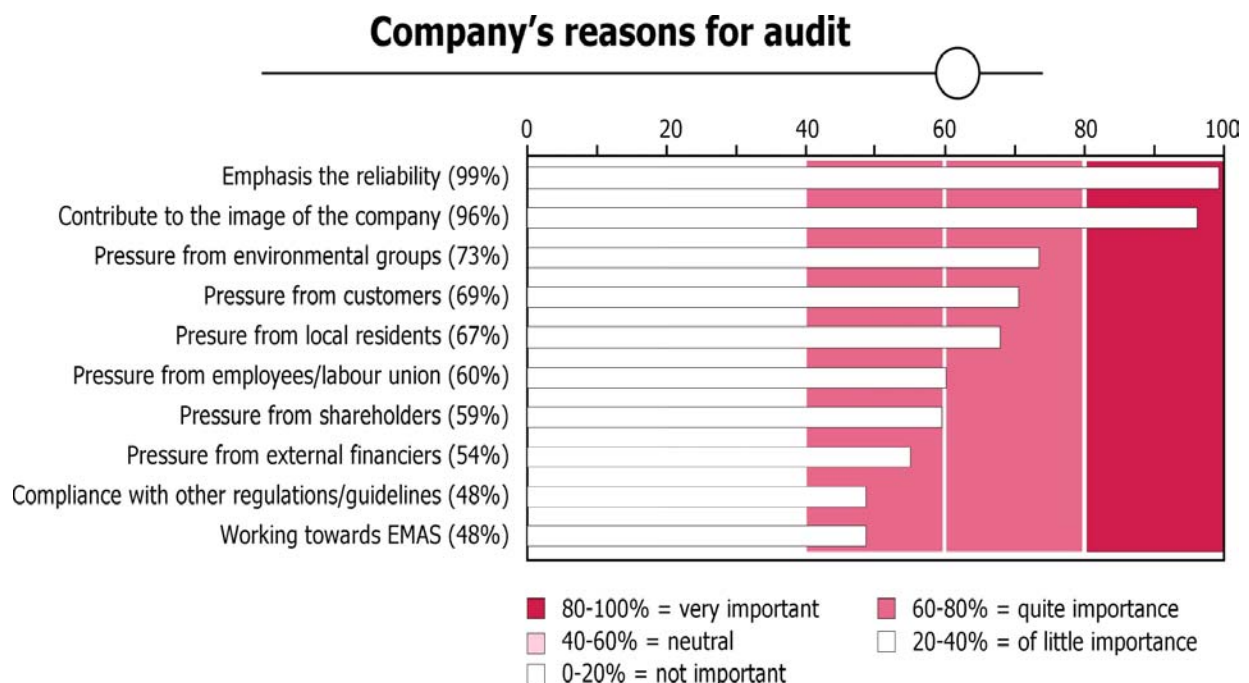
3. *An audit engagement is only given when a possible benefit is perceived.*

As long as auditing environmental reports is voluntary, organisations will only give the engagement to audit their environmental report when they also receive a certain benefit from it. The needs of organisations may differ from the needs of stakeholders. As stakeholders may have a need for assurance on the true and fair reflection of environmental performance in the environmental report, organisations may have an additional need for advice. In addition, companies may also have a need for auditing due to legitimacy purposes (see also chapter 3). Their intention may be to polish their image. Environmental award schemes and researchers, who cite companies as examples of best practice in articles and at conferences, can contribute to a positive image of the company. In addition, the way auditors write their conclusions in the audit report can also contribute to a company’s image. An example can be found in the audit report of SustainAbility in Neste (1994):

“Overall we are impressed by Neste’s strong commitment to openness, continuous improvement, and the development of quality systems”

In the survey described in chapter 4 a question was raised as to why organisations gave the engagement to audit their environmental report. Table 8.1 below shows the results.

Table 8.1



The organisations in the survey indicated that emphasising reliability and contributing to the image of the organisation were seen as the most important factors. In relation to pressures from the variety of stakeholders to audit the environmental report, the pressure from

environmental groups was perceived as most important. One of the reasons could be that other stakeholders remain quite silent in relation to this topic. The benefits have to be distinguished between benefits for the company as a whole (to which benefits perceived by stakeholders contribute) and benefits perceived by individuals within a company. A benefit to the company as a whole might be improved company reputation. A benefit to a senior officer might be a feeling of increased comfort or confirmation on the adequacy of the environmental reporting process.

In addition, the company stakeholders must also perceive a certain benefit. If stakeholders do not perceive a benefit from the audit, it is likely that companies will have little incentive to have their environmental report audited once they themselves have perceived no need anymore for such audits (e.g. because they perceive that their environmental reporting process is adequate enough). An example can be found in the environmental reports of Severn Trent and United Utilities:

“A substantial proportion of the data we publish is authenticated by either the Environment Agency, the Drinking Water Inspectorate or OFWAT. Other data that we publish has in previous years been verified by independent consultants. The trends are now well established so this year we have decided that we can rely on our own internal verification for the data previously verified by consultants” (Severn Trent, Stewardship 1998).

“The external verification or validation of environmental reports is becoming increasingly common. To date however there is little consistency in the scope or terms of reference for these activities. We do not believe that such diverse statements add appreciable credibility to the reporting process and therefore last year we invested our efforts and resources into research on what our report readers wanted from the reporting process” (United Utilities, Environment report, 1998).

The main benefit for stakeholders from an environmental audit is that it adds value to the quality of the information provided in the environmental report. The auditor provides assurance on whether the information provided complies with certain qualitative characteristics. In addition, the audit may have a preventive effect, because the company, in anticipating on the audit, will probably be more concerned with the quality of information during the information gathering and reporting process.

4. *The function of auditor exists only because users of audit have confidence in his/her unbiased and professional expert judgement.*

In order to be as unbiased as possible, the auditor has to be independent. The auditor can only be independent if he/she was not previously engaged in a consulting capacity by the reporting organisation. However, as observed from issued audit reports, some of the auditors were also involved in the process of implementing the environmental management systems. As such a conflict of interest exists which may compromise the auditor's ability to remain independent.

Because of cost effectiveness, organisations may choose those environmental consultants that were involved in the process of implementing and improving the environmental management system. After all, such consultants are already familiar with the environmental management system and therefore only need to assess the data. An example includes the following:

“Role of validation: Aspinwall & Company act as environmental advisors to the Group at a corporate level and have assisted with the planning and compilation of this Report. Through this involvement we have acquired a detailed insight into the process by which the report has been developed and of the underlying environmental management activities in the businesses. We are therefore in a position to form judgements on the progress made by the Group and on the accuracy of the report in presenting this progress. Although these judgements are made from an independent and objective standpoint, we have not carried out a formal verification of all qualitative statements and quantitative data” (EMI Group Environmental Report 1997).

This situation of advising on environmental management systems and the subsequent audit of these systems as part of the audit of environmental reports presents a clear conflict of interest of the auditors concerned. Such a conflict of interest may result in a biased audit opinion. In addition, it may be questioned whether or not these situations are really cost effective. Even audits of environmental management systems do not have their primary focus on the reporting process (Kamp-Roelands and Bouma, 1998a). Therefore auditors of environmental reports may still need to obtain significant additional evidence on the reporting process.

In addition to competence and independence, the authority of the audit is substantiated by the status of auditing as a profession and by ethical standards of auditors (Flint, 1988). Auditing environmental reports is a social function with onerous public obligations and responsibilities. In chapter 3 the features of a profession were described. The form of organisation of the audit function must be such that only fit and proper persons should be designated as qualified to be entrusted with the work (Flint, 1988). In addition, codes of ethics or ethical guidelines have to be drawn up setting out the principles of professional conduct considered necessary to sustain public confidence in the professional virtues, which are claimed. Further, some supervising body should monitor the conduct of auditors and their professional standards and apply disciplinary procedures where necessary (Flint, 1988). Auditors of environmental reports, regardless their background, therefore need a professional status. At the present time, the different kinds of auditors are accredited by different (professional) bodies, such as professional accountancy bodies and EMAS certification bodies. In addition, a large group of auditors that presently audit environmental reports are not accredited at all. For users of audit this situation is very confusing.

Despite their code of conduct, stakeholders may perceive an accountant as lacking independence, given the historical relationship which auditors have with their clients it is difficult to be critical, especially because the client is the one who pays for the auditors' services. The existence of an audit committee and a supervisory board in which stakeholder

groups are represented and which defines the audit engagements and engages the auditor, may help to improve stakeholders' perception of accountants.

Some stakeholders may argue that non-governmental organisations (NGO's) such as Friends of the Earth or Greenpeace are the most objective organisations to perform the audit. Within the accountability relationship, however, they are only one representative of the various stakeholder groups of the reporting organisation. Therefore their investigation may be biased towards their interests and therefore fail to meet the needs of other stakeholder groups. In addition, it may be questioned whether such organisations have sufficient audit expertise.

5. *The subject matter of audit is susceptible to verification by evidence.*

Without evidence, an audit is not possible. The nature, quality and persuasive effect of evidence will vary. In auditing environmental reports, most evidence has to be obtained from within the organisation itself. Since many environmental effects simply disappear into the air, water or the soil, there are no 'buyers' and therefore a circulation of goods and money from which to obtain evidence is lacking. Only in relation to waste is there a certain circulation of goods and money. Within the environmental information process, it is therefore important that especially the internal control in relation to the reliability of measurements of environmental effects is adequate. These internal control measures are irreplaceable. If the internal control measures are insufficient, the auditor faces too many uncertainties to be able to issue an unqualified opinion. Nevertheless, the audit may still have a benefit. Due to the natural advisory position that is inherent to audit, the auditor reports to management on the limitations found, such as within the internal control system and within internal and external reporting. Based on these findings management may decide to further improve internal control and reporting. However, responsibility for the ultimate decisions on the kind of measures to be taken as a result of the limitations found lie with the company's management.

6. *Criteria for the duty of accountability are available or can be developed.*

At the present time, there are no generally accepted criteria for environmental reporting. Some organisations have however taken it upon themselves to develop guidelines on how to report. One recent initiative is that of the Global Reporting Initiative (GRI), an organisation that represents a variety of groups, including stakeholders, preparers of environmental reports and auditors. GRI has made a compilation of existing environmental reporting guidelines. Further they have extended these guidelines for triple-bottom-line reporting, a form of reporting that addresses economic, environmental and social aspects of organisations. The criteria, however, are not as detailed or as developed as the criteria for financial reporting. Thus, there is considerable room for different interpretations. However it is questionable whether providing detailed guidance at this early stage of environmental reporting is desirable given that it could restrict new developments in environmental reporting. Given the possibility of different interpretations, it is important that organisations, before giving the engagement to the auditors, discuss the criteria for the duty of accountability with their different stakeholders. In addition, such discussion adds to the authority of the audit. Users of audit may accept audits more readily when the audit criteria have the support of a wide variety of stakeholder groups.

7. *The audit judgement can be communicated in a clear and unambiguous way.*

The audit of environmental reports can be performed by a multidisciplinary team. This has consequences for the form of the audit report. As mentioned in chapters 5 and 7, different strategies are available. The lack of generally accepted reporting principles and auditing standards has consequences for the audit report. Providing a true and fair view of environmental performance may be difficult given that the lack of generally accepted reporting principles may lead to different interpretations on what constitutes true and fair view. Given the many inherent and specific limitations to the accuracy of the data, the audit report should be read in conjunction with the reporting principles as described in the environmental report. Evidence from chapter 7 demonstrates that a lot can still be done to improve existing audit reports in order to be clear and unambiguous in reporting the audit judgement.

In this paragraph the postulates were discussed as well as their interpretation for auditing environmental reports. In the next paragraphs the interpretation of the different elements of auditing for the field of auditing environmental reports will be discussed.

8.3 The domain of the audit

The domain from which the audit is performed will depend on the needs of the users of the audit. Wilschut (1989a) distinguishes between the need for an opinion on the state of affairs itself and an opinion on the reflection of the state of affairs. In relation to environmental reports, this may be interpreted as differentiating between an opinion on environmental effects and an opinion on management's assertion on environmental effects as reflected in the environmental report. If an opinion is needed on the environmental effects, the subject matter comes from the environmental domain and therefore the audit should take place from the environmental domain. Besides auditing expertise, expertise on environmental effects is necessary. If an opinion on the *reflection* of environmental performance is needed, the subject matter of audit seems to come from the accounting domain and therefore it seems that the audit should take place from the accounting domain by auditors with accounting and auditing expertise. Accounting is in this sense defined by Wilschut (1989a) as: the domain that is concerned to bring about sufficient information by organisations that, in a fair way, reflects reality on behalf of internal and external purposes⁴². The most important difference between the state of affairs and the reflection of the state of affairs is the opinion on the transformation process of goods (Wilschut, 1989a). Audits performed from the domain of (financial) accounting do not provide any assurance on whether flows and stocks of substances and goods are identical to what is reflected in the report. In relation to the financial statements the goods concerned have a certain value. Accountants do not need a knowledge of the goods, because within the circular flow of goods clients buy these goods, which they will only do if

⁴² Accounting focuses not only on financial indicators but can also enhance non-financial indicators

these goods reflect what the organisation claims them to be. In contrast, in relation to environmental effects, there are no 'clients' willingly to buy such negative effects. The organisation even has to pay for these effects in some cases.

If users of audit have a need for assurance on whether reported flows and stocks of substances and goods are technically identical to the actual flows and stocks of substances the subject matter of the audit is the state of affairs.

This implies that the auditor of environmental reports, in order to collect appropriate evidence, has to have knowledge of the transformation process of substances into emissions and waste. In order to collect the proper evidence and to evaluate the evidence collected within the right context, the auditor needs some knowledge of these environmental processes. On the other hand, environmental knowledge is not sufficient. In evaluating the environmental effects as recorded by the organisation the auditor uses data from the financial information system. Such data may include, data on the purchase of raw materials or energy, data on products produced or the costs of waste disposal. An environmental auditor has no expertise to assess the accuracy and completeness of such financial data and therefore has to rely on the expertise of an accountant. Thus in order to perform audits of environmental reports, knowledge is required both in relation to environmental effects and environmental reporting, environmental information systems and internal control.

Under this approach, it is the characteristics of the subject matter (environmental effects with negative value) that influence the domain from which the audit has to be performed. The characteristics of the subject matter have implications for the knowledge needed to collect the necessary audit evidence.

Table 8.2 below reproduces part of the results of a survey performed by Collison and Gray (1997). They asked 616 experienced accountants working in large audit firms (312, response 122), in multi-partner firms (152, response 61) and as sole practitioners (152, response 58) about their views on extending the profession's role. Answers were given on a five point Likert-scale (1= strongly agree, 3= neutral, 5= strongly disagree). The evidence suggests a strong association between the respondent's firm size and their views on the profession's further involvement in environmentally related work. In statements 7.3 and 7.4 the highest level of agreement that there is a potential role for many firms, including small ones, is that held by the big six firms⁴³ who, on balance, have most experience in the area.

⁴³ Now the big 5

Table 8.2- Views on extending the profession's role

Mean response by size of firm						Significance levels (association with firm size)			
No.	Statement	BS	OL	MP	SP	KW	K	Chi-S (LR)	Chi-S (MH)
7.1	The professional skills of the auditor can usefully be brought to bear on the attestation of environmental reports	2.27	2.61	2.93	2.98	***	***	*	***
7.2	There is a role for large audit firms, which have specialist environmental expertise, in verifying environmental reports	1.98	2.72	2.57	2.62	***	**	***	NS
7.3	There is a role for many audit firms in verifying environmental reports if they liaise with independent environmental specialists where necessary	2.57	2.62	2.75	2.83	NS	NS	*	NS
7.4	There is a role for the small audit firm in verifying environmental reports in liaison with environmental specialists	3.07	3.14	3.08	3.36	NS	NS	NS	NS

BS= Big six; OL= other large firms; MO= multi-partner firms; SP= sole practitioners; KW= Kruskal Wallis 1-way ANOVA; K= Kendall correlation coefficient; Chi-S (LR)= Chi-squared test likelihood ratio; Chi-S (MH)= Chi-squared Mantel-Haenszel

*= significant at 5% level (1- tailed); **= significant at 1% level (1-tailed); ***= significant at .1% level (1-tailed); NS= not significant

Source: Collison and Gray (1997)

Whether the accountant has sufficient expertise to perform audits of reports for accountability purposes other than financial statements is a valid question. Let us now look at the pros and cons when accountants perform the audit of environmental reports.

Accountants already have experience with auditing statements for accountability purposes. By means of additional education, accountants could also be capable of auditing other statements for accountability purposes, such as the environmental report. In performing these audits, they can use experts in the environmental field. People in favour of the extension of the services provided by the accountancy profession may argue that the following may be sufficient to enable accountants to perform audits of environmental reports:

- a) Additional education;
- b) Reliance on the expertise of those within the organisation to be audited;
- c) Use of other experts.

a) Additional education

In the Netherlands, a special post-graduate programme of education existed for accountants who wish to specialise as an environmental accountant. This education programme gives special attention to environmental effects, environmental law, environmental management, environmental reporting and environmental auditing (of the environmental management system and of the environmental report). According to Piet (1996, 1993) such specialised accountants can perform audits of environmental reports and assume sole responsibility for such reports: “A specialised environmental accountant is the only person able to perform this verification (the audit of environmental reports) correctly” (Piet, 1996, p. 437). In performing the audit, there is normally sufficient knowledge within the organisation itself on which the accountant can rely in forming an audit opinion.

In general, also Bindenga (1973) is in favour of expanding the services provided by the profession in order to fulfil user’s needs. In such situations, the accountant has to adapt his/her expertise. In relation to the new assurance engagements framework, Elliott (1997) refers to new services may call for new competencies. Audit firms have to close the gap between their existing competencies and those needed to deliver these new services. The audit firm can close this gap by training and/or hiring personnel or by reducing the required competencies by curtailing the range of services provided.

One question which arises is whether the accountant needs additional education in order to be able to perform audits that are beyond his/her existing competence and expertise. According to Limperg (1965) this is not advisable in such situations as it can lead to an enforcement of the boundaries of the function of an accountant and an arousing of public confidence that is not usually justified. The accountant has only partial expertise in this domain and is not competent in techniques which do not form part of his/her domain. Even though the accountant has additional experience in the environmental domain, the accountant will, given that his main expertise is not in the environmental domain, encounter certain problems, for example in relation to (Kamp-Roelands, 1995):

- a) the completeness of the environmental impacts as presented in the environmental report:
What are the risks for the environment due to the company’s activities?
To what extent are all the significant environmental impacts reported?
To what extent has all relevant information in relation to a specific significant environmental effects and impacts been included in the report?;
- b) materiality and audit tolerance:
This concept has quite a different meaning in the context of environmental reports as compared to that in the case of financial statements. The damage to the environment is now at stake. An emission of a highly polluting substance will lead to a more limited audit tolerance than the emission of a less hazardous substance.
- c) the inherent risk assessment:
In the absence of proper internal control, to what extent are recorded environmental effects susceptible to misstatements either individually or in aggregate combined with misstatements relating to other accounts?

d) the reliability of the primary registrations:

An accountant cannot assess whether recorded measurements are representative, in the right place, at the right time, according to the right methods and at the right frequency.

Due to the lack of (technical) environmental knowledge, the accountant may encounter uncertainties or difficulties in relation to the credibility of certain topics in the environmental report. The accountant can, however, make an appeal to the axiomatic restrictions of an audit. These imply that the accountant is not responsible for those issues that could not be revealed by a sound investigation. The boundaries of sound in this sense are set by:

- The expertise of the auditor;
- The use of the (combination of) the appropriate means to collect evidence;
- The costs of the audit in relation to the benefits;
- The appropriate execution of the audit.

The inherent limitations of auditing, also referred to as axiomatic restrictions, affect the auditor's ability to detect material misstatements. The axiomatic restrictions consist of, amongst others, the limitation that the auditor does not have experience in all matters that could be relevant for an audit (see chapter 3). The limits of the auditor's expertise however will be determined by the extent to which he/she is able to perform an opinion independently. For accountants one could say that if the accountant, in giving an opinion on the credibility of the environmental report, arouses more confidence than is reasonably justified or if the extent of the axiomatic restriction is too large, the audit opinion has no added value (see for example Wilschut, 1987a and the problems mentioned above). In order to fulfil users' needs, the axiomatic restriction should be as small as possible. In addition, bypassing internal control measures by management (management override) is a serious issue, especially in relation to the environment. However, the possession of environmental knowledge, such as knowledge of possible environmental effects caused by certain substances, the transmission process and the consequences of the use of certain measurement techniques, may provide more insight into the possible existence of a management override.

The above discussion illustrates that the accountant, even with additional education, requires the knowledge of environmental experts in order to prevent the axiomatic restriction from being so large that no added value is given.

b) Reliance on the expertise within the organisation to be audited

Opinions differ on the use of knowledge of personnel within the organisation being audited. Limperg (1965), for example, was averse to auditors relying on using this knowledge. In his opinion, society seeks an opinion from a person who is responsible for managing the organisation. As soon as the accountant relies on the work or opinion of employers and managers of the organisation whose financial statements are audited, the accountant's *râison d'être* ceases to exist. Today, accountants rely on internal controls. However, the accountant must first assess the sufficiency of internal controls. Relying on the knowledge within the organisation, however, can never compensate for a lack of knowledge that is required to carry

out an audit. The accountant must always be aware of the risks of conflicts of interest and it is for this reason that the accountant was asked to audit the environmental report. Therefore, accountants may sometimes require assistance from independent environmental experts for the audit of an environmental report.

c) Use of other experts

An accountant may seek the expertise of external environmental experts in the audit of an environmental report. In doing so, the accountant should assess, amongst others, the source data that the experts have used (similar to the requirements for financial statements as mentioned in ISA 620.12 and ISA 620.13). When considering whether an expert has used appropriate source data in the circumstances, the accountant would consider the following procedures:

- a) making inquiries regarding any procedures undertaken by the expert to establish whether the source data is sufficient, relevant and reliable; and
- b) reviewing or testing the data used by the expert.

It is particularly in relation to assessing the reliability of the source data (the primary registration) that the accountant has to rely on an environmental expert. Hence, the procedures for using the work of an expert similar to those as mentioned in ISA 620 cannot be fulfilled. Additional procedures in this area are therefore necessary. The accountant can decide to what extent such experts are used during the course of an audit. However, a necessary condition for retaining the position of lead auditor is that the accountant is still able to form the audit opinion on the environmental report in accordance with the terms of the engagement.

An almost similar situation existed in relation to auditors and actuaries. The pension reserve and life insurance reserve are the biggest accounts in the financial statements of pension funds and life insurance companies respectively, and changes in these reserves can have a material impact on the financial statements. An accountant is normally not qualified to assess the adequacy of these reserves without the assistance of actuary. In the 1960s and 1970s most accountants made in a reference to actuaries in their audit report. Some actuaries, however, suggested that the audit report be signed by both the accountant and the actuary. The main problem of a jointly signed audit report relates to the liability of actuaries. As most actuaries are employed by the pension fund or life insurance company itself, their contractual liability is set in accordance with the terms of their employment. The accountant normally has sufficient knowledge to assess data that is used by an actuary. In addition, the accountant can ask the actuary critical questions. Furthermore, the accountant has circumstantial evidence because the insurance company also assesses the actuary's valuation and there is also an industry comparison of valuations.

The main difference with an audit of environmental reports is that the accountant, during the audit of such reports, in relation to the source data, may have to rely on an environmental expert. The accountant can ask only critical questions on the data collection process, but has no knowledge of the source data itself. In my opinion, even when the audit of environmental

reports is aimed at giving an opinion on the reflection of environmental performance, the accountant has to rely so much on the expertise of environmental experts that in practice he/she does not so much use their expertise but co-operates with them. Specific environmental expertise is necessary, not only for the collection of evidence, but also for the evaluation of evidence in order to place the evidence in the proper context. The emphasis on the work to be performed by the environmental auditor lies mainly in the first stage of the audit and includes evaluating materiality and audit tolerance, establishing the inherent risk, evaluating the accuracy and completeness of the source data and evaluating standards and other audit criteria available within the organisation being audited. Next, based on the source data, the accountant can assess whether the environmental report provides an accurate reflection of the source data. The more standards there are on reporting on certain effects and measuring and analysing samples of certain effects, the more procedures the accountant can perform by him/herself.

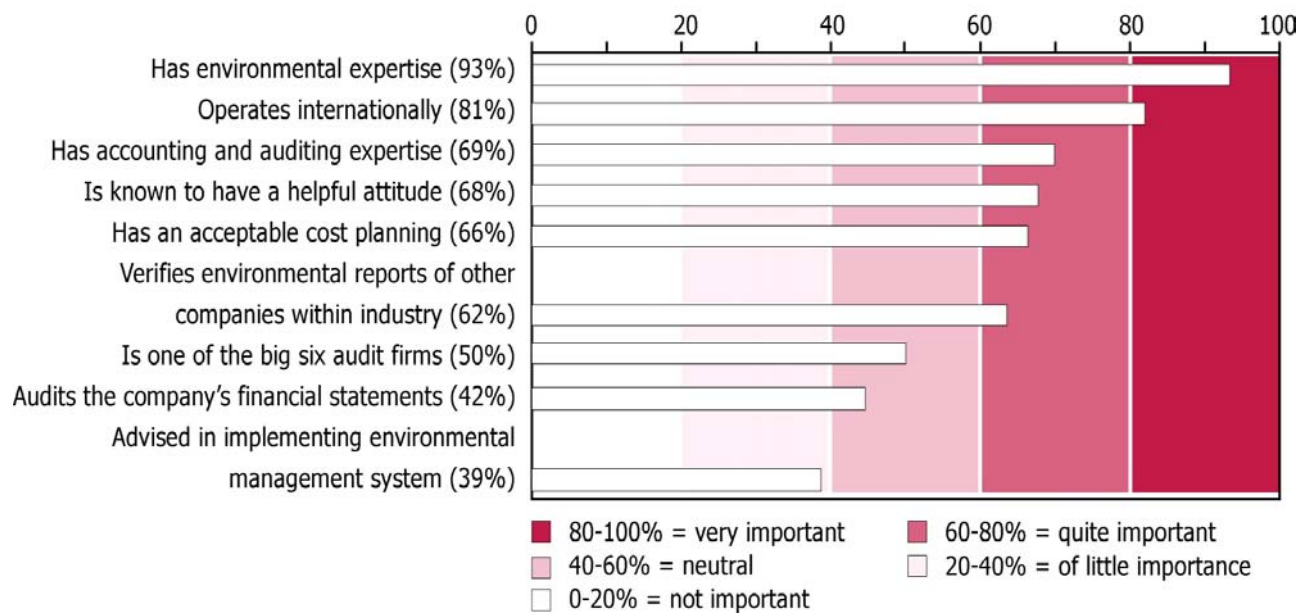
The technical environmental knowledge of experts enables the accountant to evaluate the accuracy of the transformation process of substances and the emissions produced. In contrast to goods that have a positive economic value, in the case of negative environmental effects there are no customers to provide third party evidence that they are indeed the goods as reflected in the accounts. Market forces do not work for goods that have a negative economic value. To secure the accuracy of the substances, additional measures have to be taken. In relation to waste, waste disposal companies may create an artificial market by means of additional measures such as procedures for the acceptance of waste. In relation to other environmental effects such as emissions to air and water and pollution of soil, no recipients are present and therefore such possibilities are absent. In these situations, the accountant has to rely on the accuracy of the internal and external measurements.

At this early stage in its development, it seems that the audit of environmental reports sits at the interface of two domains, the accounting domain and the environmental domain. The environmental domain lacks environmental accounting and auditing expertise and the accounting domain lacks technical environmental expertise. It is for this reason that both domains have to work together. Although both can work on their deficiencies, multidisciplinary teams probably will remain necessary. In future, the will market eventually define the domain from which the audit is performed.

In the survey described in the previous chapter, companies that published an audited environmental report were asked to indicate the importance of auditor characteristics in their choice of the auditor. The results are shown in table 8.3.

Table 8.3

Importance auditor characteristics



The most important auditor characteristic was possession of environmental expertise.

8.4 The auditor

Preferably, the auditor of environmental reports has to comply with the requirements of a code of conduct that apply to all kinds of auditors involved in the audit of environmental reports. Such a code of conduct will cover issues such as independence, competence, impartiality and integrity. The concepts of independence, impartiality and integrity seem to be generally applicable. The more specific requirements of competence may need to be refined according to each domain. Audit competence requires both knowledge and skill, which are the products of education, training and experience.

As described in chapter 3, the necessary knowledge in order to qualify as an auditor comprises:

- a) general knowledge;
- b) knowledge of auditing principles;
- c) practices and procedures; and
- d) knowledge of the matters which are the subject of audit.

Applying this approach to the audit of environmental reports would include the following requirements:

- a) general knowledge;

- b) knowledge of auditing principles in relation to the environmental domain, including the code of conduct;
- c) practices and procedures in relation to the environmental domain;
- d) knowledge of the matters which are subject to audit.

Blokdijk et al. (1992) refer to the following knowledge requirements for environmental auditors:

- natural science or physics as a basic discipline with a specialist knowledge of the environment, preferably at academic level;
- knowledge of quality issues;
- knowledge of technique;
- knowledge of environmental legislation;
- knowledge and experience with industrial organisation and environmental information systems and internal control;
- knowledge of methods and techniques to obtain evidence and perform audits within the environmental domain.

It may be clear that in their opinion the one who performs an environmental audit is not the accountant. The knowledge required may vary with the scope of the environmental audit. As Piet (1996) describes⁴⁴ there are four stages of auditing with four different subject matters. The audit of the environmental reports is the final stage of an audit. Knowledge of environmental information systems and internal control in relation to the information process and knowledge of environmental reporting is very important at this stage.

The audit of environmental reports is an 'information' audit (Piet, 1996). The main expertise necessary is on environmental reporting, environmental information systems and internal controls. However, in order to make adequate judgements on the accuracy and completeness of the source data, a knowledge of environmental issues is also required.

Wilschut (1990), however, argues that the audit of environmental reports concerns the state of affairs itself and therefore the audit of environmental reports requires mainly environmental knowledge. The auditor in Wilschut's opinion should state that "these have been the environmental effects for this year". However, in my opinion, the environmental report is the account provided by the company's management and therefore it is the company's management who should make an assertion on, amongst others, environmental effects. The auditor then provides an opinion on the reliability of this assertion.

Defining the competence of an auditor in relation to the audit of environmental reports is difficult. Some authors such as Power (1997), FEE (1993), Blokdijk and Drieënhuizen (1992), Gray and Collison (1991), ICAEW (1992), focus on the audit of environmental management systems, which requires a different subject matter expertise compared to that required in relation to the audit of environmental information. Huizing and Dekker (1992) question

⁴⁴ see paragraph 2.6

whether accountants are capable of providing assurance on environmental reports since they may lack the necessary technical, ecological, administrative, juridical and organisational expertise. The Limperg Institute (Blokdijs et al., 1992) concludes that the financial auditing profession can make an important contribution to the training of environmental auditors (of environmental management systems) and further suggest that the audit of environmental reports should be performed by a specially trained environmental auditor rather than a financial auditor. An environmental auditor, however, should be well versed in the design of environmental information systems and internal controls, including the methods and techniques used to evaluate audit assertions. Furthermore, auditing is a set of requires skills, in which accountants have a comparative advantage (Gray, 2000; CICA 1992).

Based on a review of the existing literature (Blokdijs et al., 1992; Blokdijs and Drieënhuizen, 1992; Gray and Collison, 1991; ICAEW, 1992; ISO, 1996b) and normative reasoning, a set of requirements can be proposed for auditors of environmental reports:

- general knowledge:
 - environmental science and technology;
 - knowledge of the industry in which the entity operates;
- knowledge of auditing principles in relation to the environmental domain,:
 - audit procedures, processes, techniques and methods;
- knowledge of a professional code of conduct;
- knowledge of practices and procedures in relation to the environmental domain;
- knowledge of the matters which are subject to audit:
 - technical and environmental aspects of the entity's operations;
 - relevant environmental laws and regulations and related legal requirements and relevant voluntary industrial or business organisation agreements;
 - environmental management systems and standards;
 - environmental information systems;
 - environmental reporting, mandatory reporting requirements and voluntary guidelines.

These requirements in general are unlikely to be possessed by one single auditor. As mentioned several times working within a multi-disciplinary team is peculiar to the audit of environmental reports. Moreover, all the members of an audit team have to comply with the relevant the quality and ethical codes. FEE (1999a)⁴⁵ mentions the respective contributions of each of the auditors:

The input of the professional accountant is essential to:

- ensure that relevant audit objectives are adequately addressed;
- ensure that the audit process is conducted adequately, in conformity with this standard;
- identify weaknesses in the environmental information system and the reported data, using their knowledge and understanding of the environmental information system, including data collection and aggregation processes.

⁴⁵Based on a IFAC issues paper written for a subgroup meeting by F. Drieënhuizen

The input of the environmental expert is essential to:

- ensure full understanding of the technical processes, risk and environmental impacts;
- identify weaknesses in (the accuracy and completeness of) the data, based on knowledge and understanding of the environmental issues/impacts/effects;
- perform the more technical elements of the audit process, such as the evaluation of measurement aspects of emissions, etc.;
- assist the accountant in the audit of data when environmental information systems and internal controls are weak.

8.5 Subject matter of the audit

An environmental report, depending on the reporting company's reporting objectives (see also legitimacy theory chapter 2), is an attempt to provide a reflection of the company's environmental performance. The subject matter is therefore the information that reflects actual environmental performance and not the actual environmental performance itself. The audit of an environmental report therefore does not result in a quality judgement on the environmental performance itself. The subject matter of the audit of the environmental report is the environmental report itself. The audit is not aimed at confirming that what is included in the environmental report exists in reality, but that what is included in the environmental report is that what should be included (Wilschut, 1989a,b, 1990b).

The audit of the environmental report is an information audit (Piet, 1993). The environmental report is an assertion on the actual state of affairs of environmental performance. Accounting is the process that links the state of affairs with the assertions as reflected in the environmental report. Accounting is a social construction. The whole process of accounting is rich of a variety of conventions. The reliability of the process is governed by internal control. The assertions in the environmental report are true if they correspond with the conventions made (accounting) to reflect the state of affairs. Direct observation is almost impossible and therefore much evidence is obtained through indirect observation. Direct observations such as counting waste only provide evidence on the reliability of the source data. In order to assess the reliability the auditor has to know what the waste should be. Therefore, he/she has to obtain evidence on flows of goods within the company, since they influence the amount of waste. The audit is therefore not directly focussed on individual items in the environmental report, but on whether the information is based on reliable source data and a reliable reporting process and the information is presented in a sufficient way. It investigates whether information came into being in such a way that a realistic and sufficient reflection is given of environmental management and achieved results. Therefore, it is necessary to collect evidence on the reliability of the source data, the compilation of information from reliable source data on material flows, products and processes and the related environmental effects such as emissions and waste. The auditor therefore also investigates the design and operation of the environmental information system and internal control.

The subject matter of an audit may not only differ due to differences in the contents and quality of the environmental report⁴⁶, but also as a result of differences in the scope of the audit engagement. In practice, audit engagements do not cover always the whole environmental report. The engagement may for instance be restricted to certain quantitative figures on emissions (for example Rhone-Poulenc) or to certain parts of the environmental report. In addition, the environmental report may not cover all environmental issues that may be relevant to a particular organisation. The engagement to audit the environmental report should preferably be given by a supervisory board that represents the different stakeholders in relation to the organisation. Only in this way, can the needs of all different stakeholders in the organisation be reflected in the audit engagement. In practice however organisation's management gives the engagement to audit. This may cause a bias. In practice, a limited scope can be chosen e.g. restriction to information on certain environmental effects or restriction to information provided by certain sites only. In such a situation it is important that immediately after a draft environmental report is prepared, it is indicated precisely which pages are covered by the audit or what the limitations in scope have been. The auditor has to assess whether providing assurance on a limited scope does not create unrealistic expectations on the part of the readers of the environmental report. The auditor has a secondary responsibility for those pages that are not audited. In view of the current contents of environmental reports, in most cases the entire environmental report will be the subject of the audit. However, even if the whole environmental report is subject to audit, a scope limitation may still occur. A company may choose that the scope of the audit is limited to the process from information provided by the sites (or the information in the records) to the information presented in the environmental reports. In this case, no assurance is provided on the reliability of the source data. It results in opinions such as "the environmental information is consistent with the underlying records" (see chapter 4). Although such statements commonly appear in environmental reports they add, in my opinion, no assurance and only create further confusion. After all, 'garbage in is garbage out'. If the underlying records do not reflect the actual environmental performance nor will the environmental report. Environmental reports are accounts to a variety of readers and therefore the scope of the audit engagements on these reports should be standardised as much as possible in a way agreed with the stakeholders. On a global level, initiatives such as GRI may provide a valuable input⁴⁷. A variety in the scope of environmental reports leads to confusion for the readers and limits the comparison of the audit reports. If any limitations in scope occur they have to be clearly described and motivated.

From the results of the empirical research described in chapter 4, it appears that the environmental management system, the environmental information system, the organisation's behaviour (such as compliance with laws and regulations) or the decision making process can also be subject to audit in addition to the audit of the environmental report.

Ball, Gray and Owen (2000) argue that in order to add to external environmental transparency and accountability, environmental performance itself should be included in the scope of the

⁴⁶ see also paragraph 2.4

⁴⁷ The annex of the GRI guidelines includes principles for providing assurance on triple-bottom-line reports.

audit of environmental reports. At this moment some companies respond to this need by including, in addition to the audit report, views of experts (often on their environmental policy or on their environmental performance).

8.6 Objectives of the audit

The objectives of the audit of environmental reports should also preferably be defined by the supervisory board in which stakeholders are represented. The defining of audit objectives on a global level increases the comparability of multinational companies.

In general, the audit objective is focused on compliance with certain criteria. Evidence from the research discussed in chapter 4 showed that ‘the true and fair reflection of environmental performance’ was quite often the objective of the engagement (based on the final opinions given). This general objective can be further divided into the following objectives:

- Reliability:
 - Completeness: all items that are relevant to reflect the company’s environmental performance are disclosed in the environmental report and on each item all relevant data is disclosed;
 - Accuracy: environmental performance data are included in the environmental report at the proper quantities, other environmental information is disclosed with regard to the proper date, description and (if applicable) quantity;
 - Timeliness: The environmental information is included in the environmental report in time, in the correct period (matching);
 - Occurrence: an event, e.g. waste production, emissions and discharges took place during the period reported upon;
 - Existence: environmental policies, targets, measures implemented and internal controls exist during the reporting period as described in the environmental report;
 - Rights and obligations: rights and obligations pertain to the company at a given date;
 - Acceptability: methods used and assumptions made are acceptable, the measurements and sample analyses have been conducted and estimates arrived at in an acceptable manner; the methods for measurement, analysis and estimation methods are consistent. The selection of indicators to express the company’s environmental performance is acceptable;
- Presentation: information given on environmental performance is presented in a proper context with sufficient data, notes, classifications and proper tables. The information is presented fairly, in a neutral way with equal emphasis given to good and bad aspects of environmental performance.

The term completeness has two different dimensions. First, that information is given on all environmental issues which may be considered relevant within the terms of the engagement. Second, that, on each issue, all relevant information is given. The issue of completeness is

thus connected to relevance in that a report is complete if it addresses all the relevant environmental issues relating to the reporting entity.

Completeness is also concerned with the defined boundaries of the reporting entity. In reporting on the life-cycle impact of a product, from resource extraction to disposal, the reporting entity may go beyond the legal boundary of the entity. It is therefore important that the terms of the engagement clearly identify the legal boundary of the reporting entity and the extent to which the entity will disclose its environmental information.

It is important to have an understanding of the environmental report's target group so that the adequacy of the presentation can be reviewed at a later stage. The information in the environmental report must be presented in such a manner that it can be interpreted unambiguously by the target group. Since environmental reports have a range of audiences with different requirements and different levels of expertise, it is necessary to use judgement in evaluating whether the text is unambiguous.

Besides the audit objectives, also the required level of assurance is of importance. Although in principle, a variety of levels of assurance exist, in my opinion, the audit of environmental reports should be aimed at the highest level of assurance, taking into account the limitations inherent to auditing and inherent to the subject matter in general. Public perception of any difference between the types of engagement, especially between audit and review, is generally very poor (Limperg Instituut, 1998). In addition, the difference that IFAC tends to make in assurance (high versus moderate) is not reflected in existing audit reports (see research results in chapter 4 and 7). The research results of the opinions show a kind of continuum in levels of assurance provided. None of the reports mentioned the level of assurance that was provided. It is important to discuss these matters with the stakeholders involved. It is possible that there is a need for more alternatives other than just providing a high or moderate level of assurance. In assessing the level of assurance that can be provided, the auditor is influenced by the following factors (based on IFAC, 2000):

- a) subject matter: The subject matter 'environmental report' in contrast to financial statements contains both quantitative information and qualitative information (e.g. on environmental policy and environmental management). The subjective and qualitative aspects of the subject matter in conjunction with the absence of suitable criteria, severely may limit the quantity and quality of evidence that can be obtained (FEE, 1999a). In relation to the reliability of quantitative data on environmental effects certain tolerances need to be considered that are inherent to the subject matter. Most environmental data cannot be provided with the same degree of accuracy as financial data. This may be due to the inherent limitations of the different techniques used to obtain the data (measurements, calculations or estimates) and the frequency with which these techniques are applied. However, if these inherent limitations are explained sufficiently in the environmental report they will not affect the level of assurance that can be provided;
- b) criteria: So far, there are no generally accepted criteria, although guidance has been developed by several organisations. Before a generally accepted framework had been

developed for environmental reporting, practice moved towards the development of a framework for triple-bottom-line reporting. Auditors have to develop their own criteria in close consultation with readers of environmental reports. In practice, stakeholder dialogue on such criteria is still very rare. This may imply that the resulting criteria are set by the auditor only in consultation with the company. This is likely to bias the contents of the criteria;

- c) process: The nature, timing and extent of the procedures to gather evidence on which to base the conclusion influences the level of assurance. The higher the desired level of assurance, the more comprehensive the procedures performed have to be. In the existing audit engagements, the audit procedures to be performed may be limited by the company. The evidence provided in chapter 4 suggests that, for example, audit procedures performed at the company's sites is quite limited (none or only a few site visits are performed). This limits the strength of evidence that can be obtained and therefore the level of assurance that can be provided;
- d) quantity and quality of evidence: The professional accountant will, through the application of appropriate procedures, seek to obtain sufficient, appropriate evidence to provide the basis for the level of desired assurance. In conjunction with the nature and form of the subject matter, criteria and procedures, the reliability of the evidence itself can impact on the overall sufficiency and appropriateness of the evidence available. Almost all evidence has to be obtained within the company itself. In contrast to the audit of financial statements, except for waste, no invoices or bank statements exist. This may influence the quantity and quality of information.

The issues above may limit the level of assurance that can be provided on the environmental report.

8.7 Audit criteria

When the subject matter of an audit is information the auditor should identify the purposes underlying its publication in order to gain an insight into the potential users, their expectations and the resulting criteria. The tolerance and resulting materiality and the scope of the audit work to be performed would be based on the demands of the different parties concerned, including the client, the users and the regulatory bodies. The demands of these parties may also change over time and so the criteria can also change over time. Over time, the criteria may also change as a result of research and experience.

Establishing requirements for the contents and quality of the environmental report is therefore an evolving process.

The principal sources of audit criteria are likely to be:

- laws and regulations e.g. laws in Denmark, the Netherlands, the European EMAS-regulation, the German standard for environmental reporting;

- guidelines from different institutes and committees e.g. UNEP, CEFIC, FEE, GRI and ICC;
- criteria described by the party responsible for the subject matter (such as reporting principles);
- criteria described by the users of audit;
- literature on environmental reporting;
- criteria used for environmental reporting awards; and
- 'best practice' in environmental reporting.

In identifying criteria set by the users of an audit report, different approaches exist, including:

- meetings with stakeholder groups;
- stakeholder surveys;
- continuous dialogue between companies and stakeholder groups; and
- using a panel of stakeholder representatives as a source of audit criteria during the audit (assessing relevance and completeness).

The level of environmental reporting (e.g. site, region or corporate) has consequences for the audit criteria. For example, in the case of site environmental reports, the demands of the local community are likely to be of relatively greater importance than is the case with corporate environmental reports.

In general audit criteria can be divided into (IFAC, 2000):

- Established criteria: those established in environmental laws and regulations, or issued by bodies of experts that follow due process;
- Specifically developed criteria: those identified for the purpose of the engagement and which are consistent with the engagement objective.

The first audits of environmental reports appeared in the late 1980s at which time no guidelines existed for the contents and quality of the reports. In this situations, the evaluation as to whether the audit objectives comply with requirements is heavily based on the professional judgement of the auditor. According to his/her judgement, the auditor uses specifically developed criteria. In general, the auditor with a financial background will use his/her previous audit experience with financial reporting as a basis of reference.

Similar requirements in relation to the quality of financial reporting can also be applicable for environmental reports. The following qualitative characteristics are important (CICA, 1994; Gray, et al. (1987); Piet, 1996; Deloitte & Touche, 1996; KPMG, 1997c; Kamp-Roelands and Dijkma, 1998b; FEE, 1999b, all based on IASC 1996 which again is based on FASB, 1980):

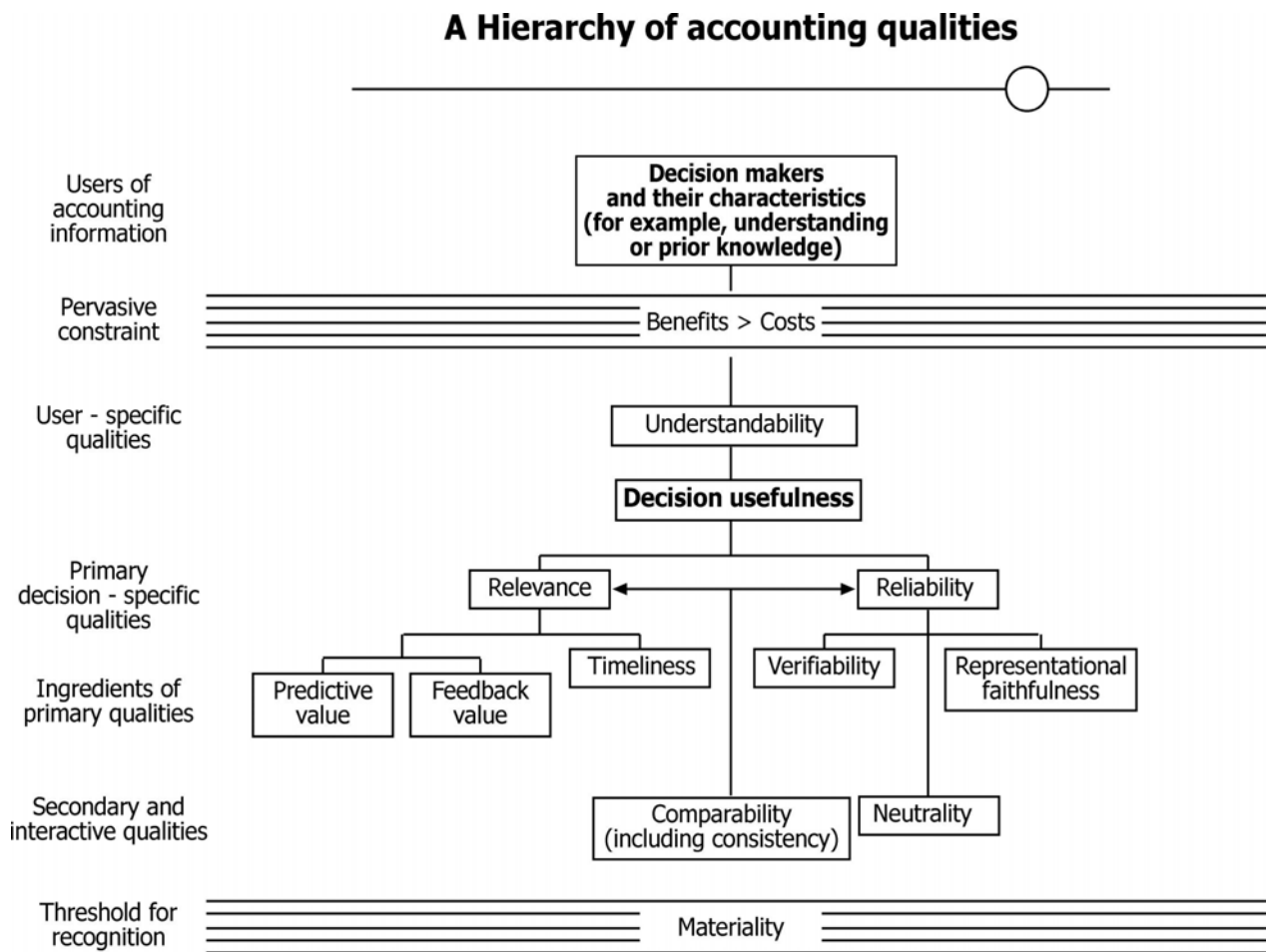
- Relevance: To be useful the information must be relevant and meet the needs of and wishes of stakeholders. An organisation needs to understand the concerns and, if applicable, objectives of each stakeholder group, weigh conflicting concerns, and organise the information into an appropriate format. Relevant information may include the direct and indirect impact of environmentally sensitive activities of the organisation, mitigation efforts and the degree of success achieved, and resource usage. The level of detail and the

basis for aggregation of this information should reflect the environmental concerns that are relevant to stakeholder audience(s). Because target audiences' concerns may vary from the local to the global level, the organisation may report the same information in various degrees of detail.

- Understandability: the information should be written to the level of sophistication of the audience and quantitative data should be adequately explained in the narrative.
- Reliability: Information has the quality of reliability when it is free from bias and material error. A number of inter-linked attributes contribute to reliability:
 - Valid description; the way in which environmental aspects are described will be important for the users' understanding;
 - Substance: presenting the information in accordance with its environmental substance and reality rather than a strict legal form. Data may be accurate but without the context or benchmark, it may not be useful;
 - Neutrality (free from bias): environmental reports are not neutral if by selection/omission or presentation of information they influence a decision or judgement. The use of inappropriately constructed graphs or the omission of controversial issues such as frequent pollution incidents, or historical and land contamination, or the storage of highly toxic/hazardous materials may bias the judgements and opinions of the user groups;
 - Completeness: all relevant information-good and bad-must be reported and the tone and emphasis of the information must present a fair picture of the organisation's position;
 - Prudence: A proper degree of prudence in environmental reporting should serve to ensure that adverse environmental impacts are not downplayed, uncertain positive environmental impacts are not reported prematurely, and positive environmental progress is not misrepresented; and
 - Verifiability: An organisation should have sufficient supporting documentation such that an independent person would be able to confirm or verify the accuracy and the completeness of the information reported on environmental performance;
- Comparability (over time and across organisations): For information to be comparable, performance measures (units of measure such as metric tonnes) and external benchmarks (such as industry best practices standards) must be defined, maintained and reported at regular intervals.

Figure 8.1 provides an overview of accounting qualities as described by FASB (1980).

Figure 8.1



Source: FASB, 1980, p. 15

These quality characteristics seem to differ to a certain extent from the audit objectives. However, this is due to the use of a different classification. The characteristics of valid description, substance, neutrality and prudence also refer to presentation which is mentioned as a separate audit objective.

In general, significant environmental effects and impacts are relevant to the readers. Indicators that can be used to determine what are significant environmental impacts include (ISO, 1996):

- a) Effect on the environment:
 - Size of the impact;
 - Seriousness of the impact;
 - Probability of occurrence;
 - Duration of the impact;
- b) Effect on the business:
 - Possible regulatory or statutory disclosure requirements;

- Problem of changes in the impact;
- Cost of changes in the impact;
- Effect of change on other activities and processes;
- Third-party interests;
- Impact on the image of the business.

In addition to the general audit criteria, specific audit criteria will emerge during the audit process. For the audit of environmental reports, most evidence will be obtained within the company itself. These specific audit criteria enhance, in particular, the design of the environmental information system and the related internal controls and the reporting principles used to obtain, calculate and estimate the environmental effects and impacts. The specific audit criteria form an important role in the auditor's judgements. Examples include environmental targets and the environmental impact register, which may serve as audit criteria once their reliability has been established. Further, the auditor needs certain yardsticks to facilitate the assessment to what extent or how often a criterion can be violated before there is non-compliance. This will be influenced by the kind of information provided in the environmental report. A misstatement of information may be considered material if its omission or inaccuracy, in the given circumstances, would change or influence the opinion of a users to whom the environmental report is addressed. In contrast to financial statements, materiality is not mainly related to quantity. Materiality is more related to the significance of the environmental effect (see above). The emission of a small toxic substance (e.g. dioxin or mercury) can be very material.

8.8 Evidence

The evidence can be obtained using different methods and techniques. Most evidence is obtained from internal sources. In order to be able to form an audit opinion there should be enough evidence available that the auditor can collect to assess the credibility of the environmental report. In collecting evidence in relation to the credibility of the environmental report, the auditor has to rely on the internal control within the company. In companies however the process to collect the data for the environmental report is still quite unstructured (Kamp-Roelands and Bouma, 1998). Procedures in relation to measurements exist, but often there is a lack of procedures in relation to the process of compiling information from the different data available. If this is the case, the auditor cannot rely on the internal controls within the organisation. As most of the data in the environmental report come from sources inside the organisation, the auditor may be presented with too many uncertainties. These uncertainties may, however, reduce over time as environmental information systems become more sophisticated.

For the collection of evidence, specific methods and techniques may be used.

Effective audit evidence is audit evidence that is adequate (according to the scope of the audit procedures) and appropriate (in terms of the nature and times at which the audit procedures are performed) to the audit purpose.

In general, the following types of audit procedures are distinguished:

- a) Tests of control: The general purpose of tests of control is to obtain audit evidence on whether the form of internal control is appropriate to prevent, detect or correct significant errors and whether the internal control measures are implemented and operate in accordance with their intended form. Techniques⁴⁸ that can be used to obtain audit evidence include a combination of requests for information and documentary verification and observation;
- b) Substantive procedures are procedures that focus on the data itself. Two different types of substantive procedures are distinguished:
 - (1) analytical procedures: analytical procedures are generally used to obtain evidence on:
 - the effect of continuous processes and estimates, the relationships and trends of which can be estimated;
 - environmental effects that have a reasonably stable development;
 - environmental effects for which audit evidence, for example concerning completeness, can be obtained only with difficulty by means of other audit procedures.

Techniques that are used include comparisons, calculations, requests for information, documentary verification and observations. Environmental data may be analysed and related to each other against the background of an established expectation of developments. Analytical procedures also comprise the analysis of environmental performance indicators or trends.

(2) Tests of details: Tests of details are used to verify one or more audit objectives.

They are also effective to obtain audit evidence on:

- the effects of non-continuous processes;

⁴⁸ In general the following types of techniques can be used :

- (a) Comparison: visually or electronically, establish agreements and differences between two or more documents, physical objects or data.
- (b) Calculation: establish the arithmetical accuracy of source documents and records or conduct own calculations.
- (c) Confirmation: usually a written reply to a request, also usually written, to confirm information recorded in the accounts.
- (d) Request for information: requesting the information we need from competent persons inside and if applicable from outside the entity. For tests of control, this includes asking questions to obtain information from competent client employees, listening to and evaluating their replies, critical questioning and, if necessary, seeking confirmation of the information obtained.
- (e) Requests for information may be formal or informal, written or oral.
- (f) Verification: by means of documents or other records: reading records or documents, visually or electronically.
- (g) Observation: observing a process or measure during implementation by third parties.
Inventories/stock counts: checking the physical presence of a tangible asset.

- the effects of non-recurring events;
- the effects of incidents.

Techniques that may be used include comparison, (re)calculation, requesting third-party confirmation, documentary verification and stock counts.

Obtaining evidence is an ongoing process. The auditor continuously evaluates whether sufficient evidence is obtained. The quantity of evidence is also influenced by its reliability. The reliability of the audit evidence is influenced by its source and by its nature (ISA 500.15)⁴⁹:

- audit evidence obtained from outside the entity is of greater value than that obtained from within the entity;
- audit evidence obtained within the entity is of greater value if the associated internal controls are effective;
- audit evidence obtained directly by the auditor e.g. by means of comparison, documentary verification, observation or stock counts is of greater value than that obtained from the entity e.g. by interviewing others;
- audit evidence in the form of documents and written confirmations is of greater value than oral confirmations;
- audit evidence obtained from several sources that leads to the same conclusion is of greater value than that obtained from a single source.

The evidence is obtained during the audit process. In the following paragraphs, the different phases and procedures that can be performed are discussed.

8.9 Audit process

8.9.1 Introduction

The audit evidence is obtained during different phases and steps referred to as the audit process. These different phases and steps are interrelated. Each step may have consequences for decisions to be taken in subsequent steps or those already taken in previous steps. In addition, the steps do not necessarily have a chronological order. For instance before confirming the engagement, the auditor has already some knowledge of the client's business, the nature of the environmental information systems and the engagement risk. Since not all events can be verified a choice has to be made in relation to the kind of evidence that is being collected. The risk analysis as described by IAPC (IFAC/IAPC, 1998) provides a method for collecting the primary evidence in relation to the activities of the client and of its internal control process and for choosing the appropriate audit approach with which to obtain

⁴⁹ See also paragraph 3.4.4.2

additional evidence. There is a need to differentiate between the risks for the audit firm associated with the engagement and the key risk areas for reporting on which the audit will focus.

The subject matter of the audit for the purpose of this thesis is taken to be the quantitative data in the environmental report and any accompanying explanatory notes. The audit objective is stated as being the reliability of environmental performance data. This general audit objective can be further divided into sub-objectives (see paragraph 1.5 and 8.6). Since generally accepted criteria are lacking, especially the audit objective of 'completeness' in particular is difficult to assess. Completeness as explained in paragraph 8.7 has two dimensions: reporting on all the topics relevant to stakeholders and reporting all relevant matters for each topic. In the description of the audit process, only the second dimension will be discussed here. For the first dimension of completeness, the auditor has to assess the process of how the company itself decided on the topics that were included in the environmental report. Starting points for this process for example can be found in using a stakeholder panel to assess completeness or using existing guidance such as from UNEP and GRI in which the topics on which has to be reported are discussed. Further, the auditor or the audit team has to have environmental knowledge and specific industry knowledge. This is necessary to have an overall view on the topics which are reported. In the next paragraphs, the different stages of the audit process are discussed.

The description of the different stages of the audit process is based on the research results from chapter 6, the existing audit standards and guidance and the results of an audit protocol that I developed for the environmental consultancy department of a leading audit firm. This audit protocol was aimed at a full audit leading to an unqualified audit opinion on an environmental report. The audit protocol was sent to the international network of the audit firm for evaluation. Comments were received at the beginning of 1997. The protocol was tested on the audit of environmental reports performed at that time and it was found to be very useful. It has been used for Kemira and one other client in the UK (although the client felt that the guidance involved too much detail and substantive work for their requirements). A major concern was the extent to which the audit protocol was ahead of current practice and market requirements. In the absence of accepted standards for environmental reporting and given the current status of environmental information systems, the environmental consultants doubt whether an unqualified opinion based on a full scope audit could be achieved at present. In their experience, few companies have sufficiently developed environmental information systems to commit to an opinion which describes an environmental report as 'true and fair' in the terms accepted by the financial community. In their opinion, such an opinion may never be possible given the nature of environmental data. Environmental reports contain data of differing characteristics, ranging from information, which can be thoroughly tested to that which compasses estimates on broad assumptions. This may mean that a single form of wording cannot be used for all the data and instead a different level of assurance is given to different types of data.

In addition, in their view the market at present is unlikely to sustain the costs, which would be incurred in a full audit covering all sites, especially for the major multinationals which have expressed the most interest in auditing environmental reports. Instead they are seeking a more limited form of work, focused on understanding the nature of the systems used to generate data for the environmental report and identifying areas of risk. The approach of the environmental consultants to this type of engagement is based upon the systems used by companies to collate data for the report and involves documenting the systems used for recording and collating data in respect of high-risk issues. Initially this involves discussions with staff responsible for collation and production of the report, followed by 'walk through' tests to ensure that the systems operate as expected. Comparisons with external sources (as far as this is possible for example with regulators' reports) are also performed with respect to data generated by the system. Where possible a mathematical approach is taken in relation to proving the reasonableness of data relating to lower risk issues. Despite these comments, the environmental consultants believe the audit protocol to be very useful as a guide in terms of the future direction of the audit over the longer term.

8.9.2 Exploration

During the exploration stage, the auditor explores the subject matter of the audit, i.e. is the information on environmental performance included in the environmental report and the risks that this information does not comply with the audit objectives. To assess whether the environmental report meets the audit objectives the auditor uses both general and specific audit criteria. Specific criteria are those criteria that can be obtained within the entity itself. The specific audit criteria, however, can be used only if they comply with the available general audit criteria. The auditor evaluates on a general level the kind of evidence and the quality of evidence that can be obtained. The main objective at this stage is to determine whether, within the organisation to be examined, sufficient specific audit criteria are available to be able to form an audit opinion (auditability). In order to assess the risks that the environmental report does not comply with the audit objectives the auditor has to have knowledge of the business in general and of the process of obtaining, processing and reporting environmental information. During the process of exploration, therefore also the design of the process of internal control within the organisation is taken into account. The auditor explores how the information in the environmental report is collected and compiled. During this process, the auditor only explores the design of the environmental information system within the environmental management system. Of importance is also how the entity controls the information risks. Therefore, the auditor also assesses the internal controls in relation to the objective of reliable reporting. The auditor will assess the control environment, the company's process of risk analysis, the process of information and communication, the control activities and the process of monitoring. The auditor will also assess the sufficiency of the design of these processes in relation to the objective of reliability of information. During the evaluation stage, evidence is collected as to whether the specific audit criteria available within the organisation comply with the available general audit criteria. If so, they can be used in the other stages as specific audit criteria.

The method that may be used to select the evidence that needs to be collected at this stage is the risk analysis. The techniques to be used to collect primary evidence on the company's activities and its internal control process may consist of interviews, document analysis, for example of organisation graphs and task descriptions. The auditor may also evaluate whether he/she can use the results of the (internal) audit of the environmental management system. Therefore the auditor assesses the adequacy of the audit process against general audit criteria (such as can be found in audit literature and standards e.g. the independence and competence of the audit team, the quality of the audit process). Such internal audits may, however, not be performed on a regular (e.g. annual) basis. For example, EMAS requires such audits are performed only once in every three years. A similar qualification can be made for the results of the certification of the environmental management system.

In the risk analysis special attention has to be paid to completeness⁵⁰: have all environmental effects been included when reporting on a specific topic? In addition to data on measurements, therefore the flow of substances that is used to calculate the absolute emission figure is very important. Most substances, such as raw materials and final products are related to the production accounts⁵¹. These are also subject to the audit of financial statements, although the tolerances that are acceptable probably will be smaller for the audit of the environmental reports.

If the internal control in relation to reliable reporting is not sufficient, the auditor can make recommendations. From the addendum to the law on environmental reporting in the Netherlands, improvements of the environmental management system are one of the reasons for the implementation of this law (Tweede Kamer, 1996). The underlying assumption of the Dutch government is that without an environmental management system, organisations cannot compile reliable environmental reports.

During the exploration stage the following audit work is performed:

a) Assessment of materiality:

the auditor considers what would lead to the environmental report being materially misstated, presenting a materially false statement as to the organisation's environmental performance. Materiality is assessed for the perspective that the environmental report presents as a whole as well as for individual issues and environmental effects;

b) Obtaining knowledge of the business on matters of importance for the environmental report:

The auditor obtains a knowledge of the business that is sufficient to enable him/her to identify and understand events, transactions and practices that, in the auditor's judgement, may have a significant effect on the environmental report, on the audit process or on the

⁵⁰ This thesis was restricted to completeness within topics and does not cover completeness of all relevant topics to be included in the environmental report.

⁵¹ See also 6.3.2

audit report itself. An understanding of the business is important for the purposes of gaining an overall view of those aspects that may be of relevance for providing a complete reflection of environmental performance. The knowledge obtained is not necessarily restricted to the environmental aspects of the company's processes and services, but may include the whole supply chain from raw materials through to eventual disposal and/or recycling. It concerns not only the aspects that the company can control, but also those that the company can influence. For instance, a bank may influence the environmental aspects of companies via requirements in its credit policy. Certain industries may have material environmental risks that cause them to report quite detailed information on these risks and the related emissions. Such evidence may be obtained, for instance, from the dialogue that the company has with its stakeholders, requirements within laws and regulations and (industry) journals. In addition, the auditor has to gain an insight into certain agreements that may exist on the methods to be used in deriving emissions data in certain industries or under governmental and regulatory requirements, and in the inherent limitations of these methods insofar as they impact on the reliability of the data on environmental performance. The auditor also obtains knowledge on the management's perception of environmental issues and whether environmental issues are already integrated in the day-to-day operations of the company. Further the auditor obtains knowledge of environmental effects of exceptional events and if and how they were recorded. Annex 1 section A includes more details on the evidence that is obtained, the audit techniques that can be used and the various sources of information;

- c) Identification of general risks affecting the entity and consequently the information in the environmental report and the method of presentation: on the basis of the understanding gained of the business, general risks can be identified that affect the entity and may influence the information to be included in the environmental report and its manner of presentation. These inherent risks show the susceptibility of any kind of information in the environmental report to misstatement that could be material, individually or when aggregated with misstatements in other classes, assuming that there were no related internal controls. The estimate of the inherent risk has consequences for the timing, nature and scope of the work to be performed. If the risk estimate is high, the entity must have adequate internal controls in relation to these risks. A high inherent risk estimate may ultimately lead to the performance of additional interim audits to check the functioning of internal controls. It may also lead to additional substantive tests and have consequences for the formulation of the audit report. Annex 1 section B includes more details on the evidence that is obtained, the audit techniques that can be used and the sources of information;
- d) Obtaining an overall understanding of the internal control system: the auditor obtains an understanding of how the entity controls environmental information risks. This includes the control environment, the entity's risk analysis, the information and communication process, the control activities and the monitoring process. In order to be able to comply with the audit objectives the information risks have to be controlled within the entity. The report of COSO (1994) provides a starting point for the design of an internal control system. The auditor assesses in relation to the objective of reliable information, the

adequacy of the internal control system within the entity. In the audit of environmental reports, the auditor is concerned only with those policies and procedures within the environmental information systems and internal controls that are relevant to management's assertions contained in the environmental report. The understanding of relevant aspects of the environmental information system and internal controls, together with the inherent and control risk assessments and other considerations will enable the auditor to:

- identify the types of potential misstatements that could occur in environmental reports;
- consider factors that affect the risk of material misstatements; and
- to design the appropriate audit procedures.

Annex 1 section C includes more details on the evidence that is obtained, the audit techniques that can be used and the sources of information;

- e) Estimation of the control risk: the estimation of the control risk is focused on evaluating the effectiveness of the organisation's environmental information system and internal controls for preventing or detecting and correcting material misstatements. The first estimate of the inherent risk and the internal control risk will influence the nature, focus and scope of the audit procedures. The risk of the auditor issuing an incorrect opinion on an environmental report should be low. When planning the procedures to audit the system and the information at the entity, account should also be taken of the risk of errors inherent in the methods and techniques used for the collection and collation of evidence. Annex 1 section D includes more details on the evidence that is obtained, the audit techniques that can be used and the sources of information;
- f) Conducting analytical procedures for audit planning: examples of analytical procedures to assist audit planning are comparisons of quarterly emission data, comparisons of data with the previous year, developments in the current year;
- g) Identification of specific assertions made in the environmental report: Identification of the most important items and assertions in the environmental report being audited;
- h) Establishing audit objectives for each item in the environmental report;
- i) Identifying work already performed by other qualified professionals: the work already performed by other qualified professionals is identified in order to evaluate its value for the audit. Examples of work performed by other professionals are an initial review (assessment of environmental aspects related to the business activities), an (internal) audit of the environmental management system, a management review of the environmental management system and the certification of the environmental management system;
- j) Assessing the extent to which work already performed by other qualified professionals can be relied upon for the audit of the environmental report: If use is made of the results of work already performed by other qualified professionals, such as the internal audit team or the institute that certified the environmental management system, such qualified professionals and the work they performed are to be assessed;
- k) Identifying the need for specialists; and
- l) Planning further audit procedures.

Annex 8.1 includes examples of procedures that can be performed during the exploration stage.

8.9.3 Inspection

The main objective of this stage is to determine whether within the organisation to be examined enough source data are available that can be assumed to reflect accurately and completely the events of the organisation to be examined (reality). In the inspection stage, the auditor assesses whether within the organisation the process of internal control exists, and whether it operates, in the way as described in the previous stage. The system is assessed in order to provide an answer to the main question as to whether the source data reflect reality in an accurate and complete way.

The existence and operation of an environmental management system is a *conditio sine qua non* for the audit of environmental reports. The accuracy of many recordings of emissions cannot be assessed afterwards, in which case the appropriate procedures need to be performed at the moment the measurements are made. Such procedures therefore are part of the minimum requirements for internal control in order to be able to issue an environmental audit opinion. Prior research (Kamp-Roelands and Bouma, 1998) suggests that ISO 14001 is open to too many different interpretations in relation to procedures for reliable reporting. In particular too much emphasis is placed on the reliability of primary data (obtained by means of measurements). The whole process of aggregation and compilation and quality of information is not described in ISO 14001. As such an ISO 14001 certified environmental management system is not a sufficient guarantee for reliable reporting.

Due to the risk of management override, it may be necessary to perform checks on the operation of the system of internal control by means of unannounced visits. Further methods that may be used are checks on the audit trail and partial observations aimed at the operation of procedures in relation to measurements and sample taking and sample analysis.

The overall structure of the internal controls will already have been assessed in the estimate of the inherent risk. More detailed information on each aspect is now collected and its functioning tested. A distinction is made between core business and non-recurring events. There are generally no internal controls for non-recurring events.

In general, during the inspection stage special attention is paid to the following procedures:

- Collection of more detailed information on the structure and existence of internal controls;
- Adaptation of the internal control risk;
- Evaluation of the sampling and testing risk; and
- Performance of tests of controls.

Annex 8.2 includes examples of procedures that can be performed during the inspection stage.

8.9.4 Verification

The main objective of this stage is to determine that the report is compiled in a reliable way, based on the source data as mentioned in stage 2 (reliability). The procedures are aimed at verifying the results of the organisation's activities. The comparison with other evidence already collected is a substantive part of this verification. The methods will not be much different from those used for the audit of financial statements. Whether all available techniques are applicable will depend on the kind of activities of the organisation and the substances used. The coherence test for instance can only be used if differences in quantity between the main substance and the effects caused are not too large, otherwise differences may fall into tolerances used. If, for example, 100,000 tons of raw materials are used and only 10 grammes of a hazardous substance is emitted, it will be very difficult to examine this relationship. In relation to waste often a separate registration exists.

During the verification stage special attention is paid to the following procedures:

- Performance of analytical procedures;
- Performance of relational audit procedures; and
- Performance of test of details.

Annex 8.3 includes examples of analytical procedures, relational audit procedures and tests of details.

Consolidation process

The audit of the consolidation process requires both tests of control and substantive testing. A major problem is the consistency in obtaining the source data. Because of legal requirements there is rarely consistency of measurement methods between entities from different countries.

The audit of the consolidation process may include:

- Obtaining information of the consolidation process;
- Performing tests of control to check whether sites obtain and report their data in accordance with the internal guidelines; this includes checking whether the different sites being consolidated use the same definitions, the same units to express environmental performance and the same measurement, sampling and analysis techniques. If licensing conditions at certain foreign locations require different definitions and/or measurement, sampling and analysis techniques, evaluate that they are adequately explained;
- Checking whether items that are not measured in certain locations/countries are adequately explained and are not disclosed in the environmental report as zero measurements;
- Checking whether the allocation of environmental impacts to reporting periods is consistent at the various locations;
- Evaluating any corrections made to the data consolidated;
- Checking the arithmetical accuracy of the consolidation; and
- Evaluating the timely entry of the data of the sites in the environmental report.

8.9.5 Evaluation

The main objective of this stage is to determine whether the report is drawn up in such a way that, in principle, users are able to derive the information needed (sufficiency). Evaluation is mainly performed against general audit criteria.

The preliminary audit findings are discussed. During the whole audit process the collected evidence is compared with the audit criteria. It is assessed whether sufficient evidence is obtained to substantiate the ultimate opinion. Sufficient presentation is one of the objectives that may cause a problem. Sufficient presentation depends on the kind of users of environmental reports and the level of education and experience in interpreting environmental data. In practice, different environmental performance indicators are developed. As in the case of money, the value of which can be assessed using 'current purchasing power' the same kind of interpretation should be developed for environmental indicators in assessing the ultimate impact caused by the effects of products, production methods and services provided (examples of effects are emissions and the use of (non) renewable natural resources).

In the evaluation stage the auditor performs, inter alia the following procedures:

- Evaluating whether the selected key environmental indicators present sufficiently the company's environmental performance;
- Evaluating the overall view presented by the report;
- Evaluating the completeness of the parameters.

When the auditor has decided that sufficient evidence has been obtained to arrive at an opinion, the auditor will report on the audit and its results.

8.10 Audit report

The audit report is the means by which auditors report on the conclusions of their audit work to the intended users of the audit in accordance with the terms of the audit engagement.

Although the quality requirements should be set in consultation with the users of the audit one may assume that some general quality requirements of information may also apply to audit reports. These include (see also chapter 3.4.5):

- **Understandability:** the audit report has to be understandable to the readers. This implies that technical and ambiguous terminology should be avoided. The description of audit procedures alone is therefore insufficient, and the auditor should also explain the main purpose of the audit procedures. Further the audit report, especially when it is a long narrative report, should be broken-down into manageable sections through the use of headings as appropriate;
- **Relevance:** the information in the audit report should be relevant to the readers. This implies that although the audit report may be issued as a long narrative report, the auditor should avoid providing an audit report that is too lengthy. In practice, however, audit reports of more than one page are not an exception. In fulfilling

stakeholder needs, the audit report may contain, in a separate section, information on recommendations and on follow-ups on previous recommendations. The audit report date should be as close as possible to the environmental report date.

- Completeness:
 - In relation to the audit report: the audit report includes information on all topics necessary to provide an overall view of the audit. Only in this way can the audit conclusions be reported in their proper context. The topics on which information is given include at least the subject matter, the audit objectives, the audit criteria, the audit process and the audit conclusion;
 - In relation to the scope of the engagement: limitations in the scope are clearly mentioned. It must be prevented that the users of audit may falsely perceive that the whole environmental report has been audited (full audit) when in fact only a certain part has been subject to an audit (limited scope audit). Therefore limitations must be clearly described in the section on the scope of the engagement. Limitations include limitations in the subject matter, in the audit objectives and in the level of assurance provided. In practice, certain limitations in the scope of the engagement are also mentioned in the description of the audit procedures. However, this is confusing for the readers. If the auditor has not obtained evidence from a representative sample, this means a limitation in scope and therefore should be mentioned in the description of the scope of the engagement rather than in the description of the audit procedures. Eventually all limitations in scope should be overcome since they cause confusion for readers of audit reports;
- Neutrality: The information in the audit report is free from bias. The audit findings are presented in a balanced way. In order to be credible the auditor should be professionally, financially and personally independent from the company. Auditors may want to emphasise their independence by mentioning it explicitly in the audit report. Further, an auditor who has also performed consultancy engagements, for instance in relation to the implementation of the environmental management system, cannot audit the environmental report since he/she would be auditing their own advice;
- Prudence: The auditor should not give any value statements without any underlying supporting evidence. In the event of any uncertainties which exist due to the present state of the environmental information system the conclusion of the audit report should be carefully worded;
- Consistency within the audit report. The scope of the audit, the scope of the audit procedures and the scope of the conclusion should be consistent with one other. Providing a true and fair view⁵² while the scope was limited to certain topics only is misleading. It is also misleading to give an opinion on the report as a whole in cases

⁵² At the present moment, without generally-accepted standards for environmental reporting and proper stakeholder dialogue it will not be possible to provide a true and fair view but rather a balanced view with data being reliable.

where the audit procedures were limited to the reporting process and excluded an audit of the reliability of the source data at the sites;

- Faithful representation: the findings in the audit report should be a faithful representation of reality. Therefore they should include a reference to any material inherent difficulties encountered during the course of the audit and to any material qualifications and/or reservations;
- Comparability: in order to be comparable, audit reports should follow a consistent format . Preferably, the audits should also have the same scope;
- Timeliness: the audit reports should be dated so as to inform the readers that the auditor has considered the effect on the subject matter of material events which the auditor has become aware up to that date.

In order to add value to the environmental report, the characteristics of the auditor himself/herself (being the sender of the message) are also important. The readers of environmental reports should perceive the auditor to be credible. Factors that add to the credibility of auditors include:

- the independence of the auditor. If users perceive that the auditor is not independent from the auditee, his/her message will lack credibility;
- the competence of the auditor. The auditor (or team of auditors) should possess both audit knowledge and subject matter knowledge. The readers should find some information in the audit report to the effect that the auditor is sufficiently competent. This may include some form of reference in the audit report to the multidisciplinary nature of the team that has performed the audit;
- the professionalism of the auditor. The professionalism of the auditor can be shown, for instance, by references to codes of conduct and standards on auditing that the auditor has complied with. In addition, the audit procedures performed should be sufficient so as to enable the auditor to arrive at his/her opinion. For the readers however this is difficult to assess without any audit knowledge.

The conclusion that is formed based on the audit process is not necessarily an unqualified opinion. Drawing on the practice of financial audits, we can classify qualified opinions into the following typology:

- Adverse opinion (fundamental disagreement): the auditor concludes that the environmental report, because of misstatements or a lack of information, does not meet the audit objective. The effect of this disagreement with the party responsible for the subject matter is so material and persuasive to the environmental report that a qualification is not adequate to disclose the misleading or incomplete nature of the environmental report;
- Qualified opinion (uncertainty and/or disagreement, material but not fundamental): the environmental report contains material misstatements or omissions and/or a material uncertainty regarding the audit, but the effect of any disagreement with the party responsible for the subject matter or the uncertainties are not so material and persuasive as to require an adverse opinion or a disclaimer of opinion, respectively;

- Disclaimer of opinion (uncertainty fundamental): the possible effect of limitation on scope is so material and persuasive that the auditor is unable to obtain sufficient, appropriate evidence and is accordingly unable to express an opinion. The environmental report is proper for certain points but an uncertainty regarding the audit exists which could impair the statements desired truth and fairness).

In addition, the auditor may choose in certain circumstances to include an emphasis of matter paragraph in the audit report to highlight a matter affecting the environmental report which is included in a note to the environmental report that more extensively discusses the matter. An example includes the limitations inherent to the reliability of environmental performance data as a result of tolerances in the equipment and methods of measurement. The addition of such an emphasis of matter paragraph does not affect the auditor's opinion. The paragraph would preferably be included after the opinion paragraph and would ordinarily refer to the fact that the audit opinion is not qualified in this respect.

In order to prevent unrealistic expectations a clear distinction is necessary between a full scope audit and a limited scope audit. In the framework, therefore recommendations are provided for two kinds of audit reports: a full scope audit report and a limited scope audit report. In practice audit reports often also contain the conclusion of an assessment of environmental policy, environmental management and environmental performance. However, for users it may be more clear when these are presented in a separate statement. To inform the readers an introduction to both reports can be written that refers to both the audit report and the assessment statement. In practice, these assessments are also performed by others than auditors such as non-governmental organisations.

An audit report could include the following information:

Title [name of the engagement] – **Full scope/Limited scope audit report**

Addressee: [name of the addressee] – readers of the environmental report / supervisory board

[Heading] **Scope of the** [name engagement]

This section includes a description of the subject matter of the audit, the audit objectives and the level of assurance that will be provided.

The description of the subject matter includes:

- the name of the environmental report;
- the reporting period;
- a reference to the page in the environmental report where the reporting policy used to compile the environmental report and any inherent and specific limitations in the accuracy and completeness of the data and other information are described;
- if applicable any limitations in the subject matter both described in a positive way (what has been included) and a negative way (what was not included)

The description of the audit objectives includes:

- Description of the overall objective ‘true and fair reflection of environmental performance’ if the audit is a full scope audit;
- if applicable description of separate audit objectives such as accuracy of the information presented;
- if applicable any limitations in the audit objectives both described in a positive way (what has been included) and a negative way (what was not included).

[Heading] **Audit criteria**

This section includes a reference to the audit criteria that have been used to assess whether the environmental report meets the objectives. In addition to reference to audit criteria such as existing guidance or the company’s own reporting policy it may also include, if applicable, a reference to stakeholder panels that may have been used as a source of audit criteria to assess whether all relevant environmental topics are discussed in the audit report.

[Heading] **Responsibilities**

This section includes a description that the environmental report is the responsibility of the company’s management. It also includes if applicable a reference to the multidisciplinary team that has performed the audit and a reference to the code of conduct to which the auditor and team complies. The reference to the code of conduct should also describe the independence of the auditor from the auditee and the subject matter involved.

[Heading] Audit work

This section includes a description of the audit work that has been performed to substantiate the conclusions. The description includes:

- reference to the audit standards/guidance that is used;
- the kind of procedures performed and the techniques used and the purpose of these procedures both at corporate level and site level (if included in the scope);
- a description of how a representative sample of sites is obtained;
- any limitations in the procedures performed;
- any limitations in the sites visited.

[Heading] Conclusions

If applicable, Matters affecting opinion

This section includes material, but not fundamental disagreements and/or uncertainties

Opinion

This section includes the audit opinion. In addition to an overall audit opinion on the environmental report (in the case of a full scope audit) some more detailed facts of findings or conclusions may be given for instance on the different sub-objectives. However, the auditor should ensure that the wording of any additional conclusions or facts of findings are clear and unambiguous so as not to be considered as a qualification to his/her overall opinion. In the case of a limited scope audit, separate conclusions are given on the different audit objectives. If applicable, any uncertainties or misstatements that may affect the opinion given are reported.

If applicable, Emphasis of matter

This section is included to highlight matters that affect the environmental report and that are included in a note to the environmental report that more extensively discusses the matter.

[Signature]

This part of the audit report includes the following:

- Signature(s)/name firm(s);
- Address;
- Report data: Day/month/year;
- Profession(s).

Annex 8.4 includes examples of a full scope audit report and a limited scope audit report.

8.11 Conclusions

The audit of environmental reports is derived from the accountability concept. From a pluralist perspective, company's activities have an influence on society and therefore society has a right to information. Although society in principal has a right to reliable environmental information, the company will not always have its environmental report audited. Because audits of environmental reports are still voluntary and therefore the company's management will expect some benefit from the audit. The scope of the audit defines the domain from which the audit has to be performed. A distinction can be made between a state of affairs (fact) and management's presentation of a state of affairs (reflection). An environmental report will normally include information which provides, or seeks to give an impression of, a company's environmental performance, either as a whole or in relation to specific issues. Although this implies that the audit is an information audit, having knowledge of environmental information systems and of environmental reporting (in addition to auditing knowledge) is not sufficient. The specific characteristics of environmental effects, having none or negative value, require knowledge of the transformation process of substances. In contrast to products or services, environmental effects and impacts have none or a negative value. This implies that the auditor cannot rely on the traditional circular flow of goods and money to obtain audit evidence.

If an accountant performs an audit of a environmental report, he/she will normally need the assistant of environmental experts or, in some cases perform the audit in co-operation with environmental auditors as part of a multidisciplinary team. The ethical requirements of independence, impartiality and integrity apply to all auditors involved.

The phenomenon of environmental reporting, being the subject matter of the audit, is still very diverse. This is not only due to differences in scope (site/corporate; products/processes) but also due to the underlying process that defines the contents of the report. A company can also choose to have a limited scope audit, e.g. limitation to certain topics. A confusing situation exists when the whole environmental report is subject to audit, but the evidence gathering and therefore the assurance provided is limited to the extent to which information in the environmental report is substantiated by the information in the company's underlying records. Auditors should not accept such engagements.

The objectives of the audit may vary, but eventually aim towards providing an opinion on a 'true and fair reflection of environmental performance'. This main objective can be further divided in objectives relating to completeness, accuracy, valuations, existence, rights and obligations and sufficient presentation.

The level of assurance that can be provided is influenced by the fact that the subject matter includes both quantitative and qualitative information. In addition, tolerances exist in relation to the quantitative data, which are inherent to measurement, calculation or estimation of environmental effects. The lack of transactions with outside parties influences the quantity of evidence (e.g. invoices, bank statements) that can be obtained from outside the company. Although unacceptable, the fact that audits are still voluntary, leads to subjective limitations in evidence gathering enforced by the company. In absence of generally accepted criteria, the

auditor has to develop his/her own criteria. In principle, this should be done in consultation with the (potential) readers of environmental reports. The existing situation of not including stakeholders in such dialogue (by either the auditor or the company) on defining the audit criteria to be used is unacceptable. Eventually it will have a negative impact on the acceptability of audit. In developing specific criteria, the auditor can use the general quality attributes of information that are also used for financial information, with appropriate modifications to take into account the specific characteristics of environmental issues.

The audit of environmental reports is still evolving, being performed in a variety of ways by a variety of auditors. This chapter has focussed on the accountancy approach irrespective of the background of the auditor who carries out the audit. The general theory of auditing as described in chapter 3 formed the basis of the framework for auditing environmental reports as presented in this thesis. The postulates, the elements of auditing and the related concepts have their own interpretation for the field of auditing environmental reports. The competence required to perform audits of environmental reports will often lead to multidisciplinary audit teams. The specific characteristics of environmental reporting and the underlying environmental information process influence the methods and techniques used to obtain the evidence. The evidence is obtained both at corporate level and at site level. Given that the gathering of reliable source data includes many irreplaceable measures of internal control much emphasis is placed on obtaining evidence on this process. The structure of the audit report has a more general nature and therefore the general framework did not need much adaptation, except of course for the description of its contents.

Chapter 9 Summary and recommendations

9.1 Summary of the research

Accountability and transparency are becoming increasingly important in this fast changing society. Companies face different kinds of stakeholders to which they have to account for their activities, the way they use (human) resources and the impact their production processes, products and services may have on society. An environmental report plays an important role in the dialogue between companies and society. When the research problem was defined (1993), environmental reporting was quite a new phenomenon. In order to add to the credibility of the environmental reports some companies choose to have these reports audited. In these audits, accountants were able to provide assurance on non-financial subject matters. At the same time, other kinds of auditors with different backgrounds were involved in this field and the audit of information therefore was no longer restricted to accountants only. Further research showed that the audit approach and the audit reports of the different kind of auditors varied. In addition, the procedures performed did not always seem sufficient to substantiate the conclusions that were given. This produces a risk that eventually the users may lose confidence in the auditor and may search for alternative ways to satisfy their need for assurance on environmental reports.

In order to add quality and provide more consistency in the audit procedures to be performed and in the structure of the audit report, it is important to develop a framework on which further practical guidance can be based. The purpose of this thesis is to develop such a framework. The framework developed is a result of theoretical and empirical research. The accountancy profession has many decades of experience and has existing theories and frameworks. However, difficulties may arise when theories and frameworks from one domain are used in another domain or sometimes in addition even used by other experts. Therefore the extent the existing framework of auditing for the financial domain is applicable to the environmental domain needs to be evaluated. The framework that is eventually developed is intended for all kind of auditors of environmental reports. This includes, but is not limited to, accountants. Environmental consultants and certification bodies also perform such audits and may also benefit from a more structured approach.

The research problem of this thesis was formulated as follows:

“What are the contents of a conceptual framework for the audit of environmental reports?”

In order to solve the research problem the following research questions were raised:

1. What kinds of elements are generic to auditing?

In developing a framework for the audit of environmental reports, existing experience in the audit of financial statements can be used. I first identified what elements are generic to auditing. For identifying such generic elements, philosophies developed by the accountancy profession were used to identify its possible contribution, especially in relation to:

- Underlying assumptions;
- Concepts;
- Methods, techniques and tools.

2. What is the state-of-the-art of the audit of environmental reports?

In order to develop a framework for auditing environmental reports an insight into the audit of environmental reports in practice is necessary. Exploratory research in this field can identify both the elements of auditing environmental reports and the existing problems. With regard to the state-of-the-art the following research questions exist:

- a. Is there a lack of consistency in the audit of environmental reports?
- b. If so, could this give rise to an expectations gap?

3. To what extent can practical experience contribute to a conceptual framework for the audit of environmental reports, especially in relation to:

- Planning;
- Audit procedures;
- Reporting?

Theory of auditing in general, contribution from existing theories

In order to develop a framework for auditing environmental reports, first a general theory of auditing was developed. Philosophers from the domain of auditing financial information, such as Limperg, Mautz and Sharaf and Flint, have already taken a number of initial steps to develop a theory for auditing financial statements. Wilschut describes elements of a general theory of auditing.

Auditing is critical, investigative and has its roots in logic. The foundation of the theory of auditing consists of postulates. They form the basis for the various concepts relating to the different elements of auditing. The postulates relate to the need for auditing and conditions for auditing (with regard to the auditor, the subject matter, objectives, criteria and reporting).

Postulates

1. Existence of a relationship of (perceived) responsibility and the related duty of accountability between at least two parties.
2. Possibility for a (perceived) conflict of interest; and
Subject matter of accountability is of too great significance; and
Subject matter of accountability is too remote and/or too complex.
3. A possible benefit is perceived.
4. The function of auditor exists only because users of audit have confidence in his/her

unbiased and professional expert judgement.

5. The subject matter of audit is susceptible to verification by evidence.
6. Criteria for the duty of accountability are available or can be developed.
7. The audit judgement can be communicated in a clear and unambiguous way.

It was established that there are certain elements that should be included in the conceptual framework.

Elements of auditing

1. **Audit domain:** Auditing is performed from the perspective of a certain domain in the sense of a discipline. The domain from which the audit is performed defines the scope and as such also the limitations of the professional judgement as a result of the audit (Wilschut 1994 a).
2. **Auditor:** Users of audit reports have confidence in the competence and the unbiased judgement of the auditor. Audit competence requires both knowledge and skill, which are the products of education, training and experience. Unbiased judgement of the auditor enhances the capacity for independent thought and action, impartiality and objectivity during the process of evidence collection, evaluation and reporting the conclusions of the audit. Professionalism adds to the authority of audit.
3. **Subject matter of the audit:** The subject matter of the audit can be the policy, plans, systems, actions (behaviour), results of these actions (performance) or information about these items, all in relation to different domains. A distinction has to be made between the state of affairs and the reflection of the state of affairs. Information is a reflection of the state of affairs
4. **Audit objectives:** Audit objectives are set in negotiation with the client, but are influenced by laws and regulations. In order to be able to fulfil the users' needs they should be included in the negotiation process. General audit objectives can be divided into sub-audit objectives. Also, the level of assurance has to be agreed upon during the audit engagement process.
5. **Audit criteria:** Audit criteria are necessary to assess whether the subject matter complies with the requirements set by means of the audit objectives. The audit criteria therefore are on the same level as the audit objectives. The audit criteria can vary from authoritative standards to soft reference material. The yardsticks provide an indication as to what extent or how often the criteria set may be violated. Audit criteria have to be relevant, reliable, neutral, understandable and complete.
6. **Audit process:** During the audit process the auditor collects audit evidence and formulates his/her opinion on the subject matter. The auditor has to collect sufficient evidence to support the conclusions given in the audit report (due audit care). Various techniques, methods and tools are available for collecting audit evidence. The scientific approach based on theory and practical experience determines the kind and extent of audit

procedures to be performed.

7. Audit report: The information given in the audit report reflects not only the opinion of the auditor, but also the account of the task given to him. The audit report has to comply with the general qualitative criteria of information. It has to be clear, contain only relevant information, be comparable with audit reports given on similar audit engagements and not arouse more expectations than those that are justified based on the audit work performed and the expertise of the auditor.

Both the underlying assumptions and concepts relate to the above elements.

By means of literature review, empirical research and logic, these elements can be further refined into a framework for the audit of environmental reports.

Research results state-of-the art

A content analysis of environmental reports that were audited in Europe provided insight into the state-of-the art of auditing environmental reports during 1994-1995. The research results confirm the expectation that there is a lack of consistency in this new field of auditing. There is no uniform description of the engagement nor is there a general approach on how to audit environmental reports. At that time, 62% of the audits were performed by environmental consultants or certification bodies, 9% by environmental consultants associated with audit firms and 29% by accountants. There was no consistency between companies as to the subject matter of the audit engagement. It was not always the case that the whole environmental report was subject to audit. Further, in addition to the data in the environmental report, the subject matter may also explicitly include the environmental management system or the related information system. The audit objectives also differed between engagements. The audit reports are not clear as to the level of assurance provided. The audit reports that did mention audit criteria in the audit report showed that a variety of criteria was used. Most of the evidence to substantiate the audit opinion was obtained through a review of documentation, site visits and interviews. There was a certain inconsistency in audit procedures performed between the different audits. The contents and structure of all audit reports analysed varied. There was no uniformity. Some audit reports also contained recommendations. The wording of the conclusions varied, but in 49% of the audit reports (22 out of 45) the wording "true and fair" or similar expressions was used. Given the preliminary stage of environmental reporting and environmental information systems at that time, these results may suggest that auditors provide too much assurance. On the other hand, there were audit reports that do not add much assurance on the credibility of environmental reporting.

Expectations gap

If the variety in audit work performed and audit reports leads to an expectations gap, this may create a problem in that it may lead to a loss of confidence in the auditor. Whether the expectations gap actually leads to a loss of confidence in the auditor and the subsequent decline in perceived value of the services of these auditors is taken as an axiom, based on existing literature, and not considered further. A questionnaire sent to companies and auditors

was used to gain an insight into the differences in expectations regarding the kind of assurance provided by the audit report, the interpretation of 'true and fair view' and the difference as to the opinion given and in the scope of the engagement. The research results indicate that a communications gap exists owing to differences in expectations regarding: the content of audit reports; the interpretation of the phrase "true and fair view"; and the interpretation of the audit engagement.

Companies perceived both more (36%) and less (25%) assurance on certain assertions than auditors actually provided. In relation to three issues, namely, the view presented, material misstatements and emissions of polluting substances, more assurance was perceived on the part of companies than was intended by the auditor. Conversely, in relation to the effectiveness of the environmental management system, companies perceived less assurance than the auditor intended. The study provides evidence to suggest that companies do not perceive any difference in terms of the level of assurance provided by the various forms of wording used. There is also evidence to suggest that the auditors themselves do not always intend to provide less assurance by using these expressions, or even by using a more carefully worded form of opinion. More worrying perhaps is the finding that the auditors believed that, in relation to audit assertions, they gave the same level of assurance (54%) or more assurance (11%) than is provided by the statement that "the environmental report gives a true and fair view".

Due to the inherent limitations of auditing, the statement that the environmental report gives a "true and fair view" cannot be interpreted as providing full assurance on certain audit assertions. Nevertheless, in relation to the total number of audit assertions examined in this study, 41(41%) interpretations by companies, 10 (11%) interpretations by accountants and 23 (26%) interpretations by other environmental consultants assumed full assurance.

Differences were also found in terms of expectations on the audit engagements (67%).

Companies' expectations were especially high in relation to the detection of errors in the environmental performance data and written statements. The expectations of companies differed from those of auditors for the detection of environmental fraud, compliance with environmental legislation and advice on the environmental management system.

A performance gap may already have emerged due to the fact that the audit procedures performed for environmental reports seem to differ, both in terms of scope and depth, from one auditor to another and are less than those required by the international standards on auditing for the audit of financial statements. However, more research is needed in this area. Although the empirical results of this research have been based on a small absolute number of responses (reflecting the relatively small number of audited environmental reports), these results demonstrate the need for further research and for discussing issues of policy and practice in this rapidly evolving area of auditing.

Both the results of the content analysis of the audit reports and the survey of the expectations gap reveal the relevance of developing a framework for auditing environmental reports.

Framework for auditing environmental reports, contribution from practical experience

The results of the verbal protocol analysis provided information on how auditors actually perform the planning and especially the risk assessment. Experienced auditors of environmental reports were asked to think aloud about the planning process of the audit. The auditors received information on an actual company. The information on this actual company was obtained through a case study. The thinking aloud protocols were transcribed and analysed. The research results are interesting and useful, but at the same time reflect evidence that the planning process is still a highly unstructured task. The auditors did not use the planning procedures proposed in the international standards on auditing 300, 310, 320 and 400. The risks identified are very diverse and there is no consistency in decision behaviour. During the verbal protocol analysis subjects quite often immediately described the audit procedures without identifying the risks. This may suggest that certain audit procedures mentioned are those that they perform during each audit, which however may not be the most effective ones for a particular audit. The combination with existing theory is necessary to provide more structure in the 'normative' description of the planning.

- Data collected

Of the information collected during the planning, the most important was the information on the information system, the internal control measures in general, the analysis of differences between the normative and actual performance and the built-in control measures in the environmental information system. Of lesser importance was the information that related to the knowledge of the business and of the audit and certification of the environmental management system or of certain laboratory analyses.

During the whole audit judgement, process information was retrieved from memory. The information retrieved related mainly to different kinds of information on environmental issues, which are of relevance for the reliability of the data. The more experienced auditors retrieve information from memory more often. Most of the time was spent on evaluation. Auditors make conditional judgements and assumptions during the reasoning process. None of the auditors uses probabilistic reasoning. Certain rules of thumb were used during the evaluation process. Such rules of thumb are often based on experience with other clients or information received from other auditors, which causes a detection risk as audit procedures might be limited based on the wrong assumption.

The auditors involved have different opinions on the relevance of an ISO 14001 certificate for the audit of environmental reports. For some (6), it would have no or limited influence since ISO 14001 certification does not include an examination of whether the environmental information system is adequate to provide reliable information. The others however believe that it has major influence on the planning of the audit procedures since it provides guarantees on the systematic approach to environmental issues, including measurement and registration. The opinions on the influence of a framework license varied in a similar way. For five auditors it would not make any difference, while for the other five it would have some influence.

- *Knowledge used*

There was a difference in the knowledge that was actually used and the knowledge the auditors themselves considered most important. The knowledge that was mentioned by auditors as being the most important for auditing environmental reports was knowledge of audit techniques and of the environmental information system and measures of internal control. The knowledge that was used most often during the verbal protocol analysis was the knowledge of substances, of measurements and of the information process as a whole. Assessing whether the environmental information system reflects the actual environmental performance requires knowledge and auditing methods and techniques that are specific to the environmental domain. Assessing whether the environmental report is compiled based on the data from the environmental information system is less specific for a particular domain and therefore methods and techniques that are more general can be used. For an effective audit approach, both subject matter knowledge and audit knowledge are required. For an adequate interpretation of audit evidence knowledge of the subject matter, in this case environmental knowledge, is essential.

- *Risks identified and evaluated*

The risks identified most often comprised entity specific risks in relation to obtaining the primary source data such as measurements and calculations. Almost no inherent risks were mentioned, not even risks relating to the attitude of management. Some of the risks mentioned tend to be environmental risks rather than information risks, although as a result of the environmental risk data may be biased. The identification of risks seems to be related to experience since the more experienced auditors mentioned the most risks. Again, there was not much consistency in the process of identifying these risks nor in the risks identified. The variety of risks mentioned provided a useful input to the framework.

- *Audit procedures that will be performed*

The kind of audit procedures that the auditors would perform varied considerably. Sometimes this was due to the level of detail, but most often they were different. Most procedures mentioned however were complementary, which may indicate the importance of working in a multidisciplinary team. The auditors, even though they were referred to as environmental, also had different backgrounds in education and experience. Again, most procedures were focused on the reliability of obtaining the primary source data such as measurements and calculations. The literature and case study on the information system within environmental management systems show that there are many irreplaceable measures of internal control. In assessing whether the environmental records reflect the actual environmental performance in a reliable way much emphasis is therefore placed on collecting evidence on measurements, analyses and the assumptions and methods used for calculations and estimates.

Although there was little consensus between the auditors, the research results provided interesting contributions to the framework. The kinds of risks in relation to the way primary source data are obtained in particular are additional to the general risks already identified from literature (described in paragraph 6.3).

Audit reports

The research results provide evidence that some topics are not always included in the audit report, such as the addressee, the audit objectives, the level of assurance to be provided, the audit criteria and the information on qualifications. As such more than half the audit reports fail to provide an adequate context for the audit conclusion. Users of audits do not gain an adequate insight into the scope of the engagement and as such may misinterpret the findings. The scope of the audit reports is usually (except in three audit reports) described in a positive way only. Consequently, the user does not know what has not been done. The risk of misinterpretation is increased by the fact that a description of any limitations and qualifications is usually lacking. In total 52 out of 68 audit reports contained some form of scope limitation while the conclusions or facts of findings were limited in only 41 times. Where limitations were described, they were usually hidden since they were not described separately but had to be derived from the positive description of the conclusion and the audit work performed. Consequently, readers may not always identify these limitations. In particular, the limitations that are caused by not having verified the reliability of the source data may be very difficult to identify for users. Also, the audit reports are not similar in terms of structure. Partly this is due to the absence of certain topics in the audit reports, partly to the use of different headings or a different order for discussing the topics that are included. Further, some audit reports still contain value statements. Although they have clearly improved compared to the audit reports of 1994 and 1995, the existing audit reports still vary greatly and most do not comply with general quality requirements for audit reports. Therefore, not many examples of 'good practice' were identified. However, some lessons can be learned from the existing practice. The major lessons include consistency in the structure of the audit reports; proper description of the scope and any scope limitations of the engagement; consistency in the scope of the description of the engagement, the audit procedures and conclusions; proper explanation of any uncertainties and disagreements with management in relation to the reliability of the data; careful wording of the conclusions; separate reporting of conclusions of audit and of evaluations and references to the independence, expertise and to standards and codes of ethics that the auditor has complied with.

Framework

The postulates of the general theory of auditing were discussed for auditing environmental reports. They form the basis for the framework. The elements of auditing however needed to be further specified.

- Audit domain/auditor

An environmental report is a reflection of environmental performance. Although this implies that the audit is an information audit, possessing environmental knowledge of environmental reporting, environmental information systems and internal control (in addition to auditing knowledge) is not sufficient. The specific characteristics of environmental effects, having no value or negative value, require knowledge of the transformation process of substances. This implies that the auditor cannot use the circular flow of goods and money to obtain evidence.

An accountant performing the audit of environmental reports will have to use the knowledge of environmental experts or will even have to perform the audit together with environmental auditors. The competence required for audits of environmental reports will therefore often lead to multidisciplinary teams to perform the audit. The ethical requirements of independence, impartiality and integrity apply to all auditors involved.

- *Subject matter of the audit*

The phenomenon of environmental reporting, the subject matter of the audit, is still very diverse. This is not only due to differences in scope (site/corporate; products/processes) but also due to the underlying process that defines the contents of the report. A company can also opt for a limited scope, e.g. limitation to certain topics. A confusing situation exists when the whole environmental report is subject to audit but the evidence gathering and therefore the assurance provided is limited to the extent to which the information in the environmental report is substantiated by the information in the underlying records.

- *Objectives of the audit*

The objectives of the audit may vary, but eventually it will be a 'true and fair reflection of environmental performance'. This main objective can be further divided into objectives relating to completeness, accuracy, valuations, existence, rights and obligations and adequate presentation.

The level of assurance that can be provided is influenced by the fact that subject matter includes both quantitative and qualitative information. In addition, tolerances exist in relation to the quantitative data, which is inherent in measurement, calculation or estimating environmental effects. The lack of transactions with outside parties influences the quantity of evidence (e.g. invoices, bank statements) that can be obtained from outside the company. Although unacceptable, the fact that audits are still voluntary, leads to subjective limitations in evidence gathering enforced by the company.

- *Audit criteria*

In the absence of generally accepted criteria, the auditor has to develop his/her own criteria. In principle, this should be done in consultation with the (potential) readers of environmental reports. The existing practice of not including stakeholders in such dialogue on the part of the auditor or the company) to define the audit criteria to be used is unacceptable. Eventually it will have a negative impact on the acceptability of the audit. In developing specific criteria, the auditor can use the general quality characteristics of information that are also used for financial information.

- *Audit process*

The audit of environmental reports is evolving. The audit of environmental reports is performed in a variety of ways by a variety of auditors. The specific characteristics of environmental reporting and the underlying information process influence the methods and techniques used to obtain the evidence. Specific procedures are necessary to obtain evidence on the accuracy of the source data. The evidence is to be obtained both at corporate level and

at site level. Because gathering reliable source data includes many irreplaceable measures of internal control, great emphasis is placed on obtaining evidence on this process.

- *Audit report*

The structure of the audit report is more general in nature and therefore the general framework did not need much adaptation, except of course for the description of its contents. The fact that audits are performed by multidisciplinary teams has implications for the audit report. Various possibilities exist to express the work performed by teams and express their individual responsibility. Probably it would be clearest to describe the work performed by the team and signing using the name of the firm while stating the disciplines involved in the audit. Further, there are important limitations to the accuracy of the data. Given these limitations, an emphasis of matter may be included to inform the users of the pages of the environmental report where these are explained.

Guidelines that are specific for auditing environmental reports can be developed based on the framework described in chapter 8.

Limitations of the research

- *Limitations in scope*

The selection of the environmental reports to gain an insight into the state-of-the art was limited to European countries only. The reason was that at that time Europe, was the geographical area where most of these engagements were performed (UNEP, 1994). The survey is based on the audit reports received and may therefore be biased towards audit reports from accountants, as well as reflecting a possible bias towards practice in the United Kingdom. However, comparison with existing research (KPMG1995a, 1996; UNEP, 1994) and research performed after this study (KPMG 1997a, 1997b; UNEP, 1997) confirms that this was a highly representative sample of existing audit reports.

Since the number of environmental reports containing audit reports is still widely considered to be low, the findings of this survey may not accurately reflect practice in the coming years. Because of the small proportion of published audit reports on environmental reports, no statistical analyses were performed.

Since potential users of environmental reports are numerous, I decided to limit the research to the difference in expectations between the companies that gave the engagement to audit their environmental report and the auditors that have audited these environmental reports. The underlying assumption is that if an expectations gap exists between companies and auditors, given that companies are more aware of the contents of the audit engagement and the audit procedures performed, the likelihood of an expectations gap between users of environmental reports and auditors is even greater. Since audit engagements were different, the survey and analysis of responses focuses on differences in expectations between auditors and companies in relation to their particular audit engagement and related audit report.

The empirical research for the framework of auditing environmental reports was focused mainly on the first stage of the audit process, the exploration stage. The planning as part of the exploration stage is of importance for the efficient and effective design of audit procedures. Given the lack of generally accepted reporting principles, the focus of the research was further mainly on the judgement process in relation to the reliability of the data rather than in relation to adequacy of presentation and acceptability of the reporting principles used to draw up the environmental report.

- *Limitations in the method used*

The audit reports were collected through members of the Environmental Task Force of FEE⁵³. Although some members were also involved in the European Environmental Reporting Awards, a certain bias may still exist towards audits performed by accountants and audit firms. Further, a content analysis always includes a certain amount of subjectivity. Describing the elements on which information was obtained in advance reduced this subjectivity. Further, the survey on the expectations gap was based on 10 audit engagements only. Both the views of the companies and auditors who performed the audit were analysed.

In addition, limitations in the validity of the research results may exist since the coding of the verbal protocols involves some elements of subjectivity. This limitation is decreased by specifying in advance the coding procedures and making the coding elements consistent with current theory on human information processing (in this case, Newel and Simon, 1972; Einhorn and Hogarth, 1981). The subjectivity is further reduced by performing the analysis twice with a significant time interval in between measuring the reliability by the agreement achieved. In order to prevent sequential differences between the protocols, the analyses were performed during an unbroken period of time. Since the main purpose of the research was not to reveal cognitive processes in reasoning, but the kind of information used during the process and the risks identified, this was thought to be sufficient.

Further limitations of the research that may affect the validity of the research are:

- experts do not always agree with each other. Variables that seem to account for a substantial amount of decision variance in the ways how experienced auditors performed a complex and realistic audit are (1) information search, (2) internal control reliance, (3) alternatives considered, and (4) decision heuristics (Mock and Turner, 1981);
- experts develop knowledge in time and may reconsider certain viewpoints;
- knowledge is also client specific.

Despite these limitations, the different empirical researches provided a useful input to the framework.

⁵³ Currently named Sustainability Working Party

9.2 Considerations

There is considerable criticism on the existing practice of auditing environmental reports. Research amongst accountants suggests that accountants are aware of corporate responses to the environmental agenda, but the level of accountant's involvement in environmentally-related activities is not high (Gray, 2000). Accountants have the prerequisite attitudes to them to be involved in environmental accounting. However, the attitude of accountants does not lead to the action that may reasonably be expected. Apparently, there is a difference between attitude and behaviour. The causes cannot be found in their clients, since many business organisations are responding to the environmental agenda. Also, the professional accountancy bodies adopt a favourable environmental stance as demonstrated in their many publications in the environmental field. Apparently, accountants themselves are somehow unable to respond to the environmental agenda despite their apparent willingness to do so. Bebbington, Thompson, Walters and Walters (1994) found no clear explanations, although the educational background and the fact that the company already produced environmental information in the annual report did have a certain influence.

If accountants do engage in the environmental field, another concern exists. Experience tells us that very few if any disciplines other than accounting prepare their members to undertake independent and thorough audits of information and evidence. Consequently, it should not surprise us that non-accountants appear unable to provide readers with significant assurance as to the substance of an environmental report (Gray, 2000). Nevertheless, the evidence suggests that accountants are just as bad at providing reliable assurance as non-accountants (Kamp-Roelands, 1996, 1997a,b; Ball et al. 2000). This is a matter of concern to all members of the accountancy profession.

Evidence in chapter 4 and 7 shows that readers learn little or nothing about whether the environmental report is a complete representation of the organisation's environmental activities or anything of worth about the organisation's ecological footprint. Ball et al. (2000) found similar evidence and believe this suggests 'managerial capture' in the audit of environmental reports. Managerial capture offers little or nothing to the value of environmental reporting in accountability and the contribution to democracy (Gray, 2000). Completeness is the key value and claims made by auditors that there are no guidelines on the completeness of the account which they audit are incorrect (Gray, 2000). There are many - generally very similar - guides as to state-of-the-art environmental reporting. Equally, experience has shown that the key values of completeness can be established relatively easy by the production of an eco-balance type statement of all the inflows, outflows, emissions and leakages of the organisation.

There is a major concern about the apparent reluctance of the audit professionals to bring the same highest standards of expertise to bear on audits of environmental reports that we expect them to bring to the audit of financial statements (Gray, 2000).

The framework provided in this thesis may give auditors in practice a useful starting point in developing guidance for the audit of environmental reports. It is applicable for all auditors and not limited to accountants only. In order to prevent managerial capture it is important that auditors stimulate the stakeholder dialogue in establishing the scope of the audit (the subject matter, audit objectives and level of assurance) and the audit criteria that have to be used. Auditors themselves should not develop such audit criteria and in this way shape the environmental reports and considerably influence the accountability process between stakeholders and organisations. Stakeholders must be clear in what they expect from organisations and from auditors. Only if stakeholders define the audit criteria, e.g. for systems or for reporting, will the audit become credible. Once developed, auditors can comment on their usefulness for auditing environmental reports.

Auditing environmental reports can never replace stakeholder dialogue between stakeholders and organisations. Auditing should be seen as part of the supervisory function that is executed by representatives of stakeholders. A long time ago it was decided to delegate auditing to separate auditors with more sophisticated competence in this field. However, while it has been delegated to auditors, it remains part of the function of the supervisory board in which stakeholder representatives take part.

Potential adverse effects of the growth of auditing (as mentioned by Power (2000) including: information and inspection overload, damage to cultures of trust and an overcommitment to creating politically acceptable images of control) must be evaluated by the supervisory board of stakeholders.

Companies themselves will have to increase their transparency e.g. by stakeholder meetings and reporting. Auditing in my opinion can only contribute to the quality of communicating environmental information.

9.3 Recommendations for future research

The framework presented in this thesis is only a first step. Further research is necessary to further refine the framework.

Auditor

More research is necessary in relation to working in multidisciplinary teams. First, some insight has to be gained into the way responsibilities are divided amongst the auditors from different disciplines and the way in which the quality is monitored. Next, research is necessary to establish the extent to which the different kind of structures and divisions of responsibility influence the audit process.

Not all engagements are performed by multidisciplinary teams of environmental experts and accountants. Therefore research is necessary to identify to what extent working in multidisciplinary teams adds to the quality of audit.

The research results suggest that possession of environmental and auditing knowledge were important factors in selecting an auditor. Audits of environmental reports are offered by a variety of auditors including accountants and environmental consultants of audit firms, environmental consultancy firms and certification organisations. More research is necessary to identify the factors that companies take into account to select the auditor of their environmental report.

The extent to which the audit reports add to the credibility of the environmental report is influenced by the confidence of the user in the auditor. More research amongst users to identify the factors that are important for the confidence in the auditor and their relative importance is required. These factors may include independence, competence and professionalism.

Scope of the engagement

More research is necessary in relation to the kind of factors that influence the scope of the engagement. Audits of environmental reports are still voluntary. Therefore, the scope varies not only in relation to the subject matter or the audit objectives but also in relation to the audit procedures performed. More research is necessary to identify which factors influence the scope of the engagement, including the size of the company, the experience of the company with environmental reporting, the sensitivity to environmental risks and recent incidents in the industry which affect the image.

Audit criteria

Sofar no generally accepted criteria exist for auditing environmental reports. While guidance is being developed the contents of environmental reports are already shifting to the broader issue of sustainability. The Global Reporting Initiative has developed guidance for the contents of sustainability reports that report on economic, environmental and social performance. The development of the guidelines is an ongoing process and every two years new guidelines will be published. In addition to these guidelines stakeholder dialogue will be necessary to identify which specific company issues are important to report upon, e.g. particular policies on human rights in a certain country in which a company operates. The Institute of Social and Ethical Accountability has developed guidance for such a social audit process in which stakeholders are consulted (AccountAbility 1000). Environmental reporting is the result of being accountable to society. The scope of the account is subject to changes over time. As a result the criteria will also vary over time. More research is necessary on the way in which the auditor has to select the audit criteria and has to assess their suitability in this dynamic process of accountability.

Audit work

The research in this thesis identified several audit reports stating that companies decided on the kind of audit procedures that had to be performed. More research is necessary on the

extent to which companies can actually influence the kind of audit procedures performed and whether this influences the independence in investigation of the auditor.

The research results in this thesis provide some evidence that a bias in audit procedures may exist as a result of information retrieval from memory. The decisions made are then not based on knowledge of the client but rather on past experience. More research is needed on the extent to which auditors of environmental reports rely on previous experience in their judgements and to what extent this may bias their judgements and therefore increase the audit risk.

The research results suggest that auditors use heuristics, mainly to decrease the audit work performed. Auditing environmental reports is still voluntary and companies can decide how much money they want to spend on auditing their environmental reports, competition is severe and this causes time pressures. More research is necessary into the extent to which time pressure influences the use of heuristics and information retrieval and therefore the quality of auditing.

Audit report

Further research can be performed amongst the users of audits in relation to how the audit report should be drawn up to be clear to them. Also, such research can identify whether users can identify the difference between full scope audits and limited scope audits in the way they are presented at this moment.

Whether audit reports add to the credibility of the environmental report depends on the quality of the audit work and confidence in the auditor. The research in this thesis suggests that very often audit procedures are limited to document reviews and interviews. This may imply that the confidence in the auditor can be so high that users have no objection to the limited procedures performed.

More research is necessary to identify the influence of the confidence in the auditor on the users' perception of the quality of the audit work performed.

Most audit reports contain some form of limitation, either in the subject matter, the audit objectives or the audit procedures performed. More research is necessary to identify whether users can identify these limitations in existing audit reports and have knowledge of their implications.

Sustainability reporting

Environmental reports increasingly include more social information and are gradually changing into sustainability reports in which the company reports on economic, environmental and social performance. Research (Kamp-Roelands, 2000) suggests that the audit reports again vary much in relation to content and scope of the engagement. In addition different kind of approaches are used to add credibility to the sustainability reports. Some sustainability reports include, in addition to the audit, or include only independent opinions on

performance that are given by experts or independent organisations such as non-governmental organisations. Some social auditors focus their audit on the social audit process of stakeholder dialogue that forms the basis of the contents of the report and check whether all issues that are relevant to the different stakeholders have been addressed. More research is necessary into the extent to which the general theory of auditing as discussed in chapter 3 is also applicable to auditing sustainability reports.

Definitions

Since there is much confusion on the auditing terminology the following definitions are used in this thesis:

Accounting: the domain that is concerned to bring about sufficient information by organisations that in a fair way reflects reality on behalf of internal and external purposes (Wilschut, 1989). It constructs reality from a specific point of view or domain. Accounting is not a predominantly financial activity. Organisations are perceived as flow through systems drawing inputs from the social, legal, economic and ecological environment, processing these and producing outputs (Gray, 1992). This requires different forms of accounting and indicators, not just financial. Accounting, being the measurement, recording, analysis and communication of information about ongoing operations, emissions, transactions etc. in appropriate units, financial or non-financial (CICA, 1992).

Auditing: the systematic process of objectively obtaining and evaluating evidence regarding the degree of correspondence between a specific subject matter and agreed audit criteria and communicating the results to the users.

Auditor: a on a certain domain competent and independent person, who has met the criteria specified in national law or other established criteria.

Audit criteria: policies, practices, procedures or requirements against which the auditor compares collected evidence about the subject matter.

Audit report: a written communication in which the auditor or team of auditors may describe the subject matter of the audit, the objective of the audit, the audit criteria used, the audit work performed, the inherent and specific limitations of the audit and their opinion on the subject matter.

Bias: Bias in measurement is the tendency of a measure to fall more often to one side than the other of what it represents instead of being equally likely to fall on ether side. Bias in accounting measures means a tendency to be consistently too high or too low.(FASB, 1980)

Comparability: The quality of information that enables users to identify similarities in and differences between two sets of economic phenomena. (FASB, 1980)

Completeness: The inclusion in reported information of every material that is necessary for faithful representation of the relevant phenomena. (FASB, 1980)

Conservatism: A prudent reaction to uncertainty to try to ensure that uncertainty and risks inherent in business situations are adequately considered. (FASB, 1980)

Consistency: Conformity from period to period with unchanging policies and procedures. (FASB, 1980)

Environmental aspect: element of an organisation's activities, products or services that has or can have a significant environmental impact. (ISO, 1996a)

Environmental audit: the systematic process of objectively obtaining and evaluating evidence regarding the degree of correspondence between environmental policy, specified environmental operations, environmental management (systems), environmental performance or information about these matters and the agreed audit criteria and communicating the results to the users

Environmental effect: environmental effects include, the use of non-renewable resources, emissions to air, discharges to water, waste, noise, dust, bad odour. Environmental effects directly result from an organisation's activities, products or services. Whether the environmental effects have an impact will depend on the carrying capacity of the earth. Environmental effects occur on the short term.

Environmental impact: any change to the environment, whether adverse or beneficial wholly or partially resulting from an organisation's activities, products or services.(ISO, 1996a) These impacts may occur on both the long and short term.

Environmental information: all kind of information on environmental issues, for instance on emissions, on incidents, on the environmental policy.

Environmental information system: part of the environmental management system, designed to collect, to process and to report all relevant environmental information.

An environmental information system can be defined as the series of tasks, records and instruments of an entity by which environmental data are systematically generated, documented and processed for the purpose of providing environmental information as required, e.g. for decision making or accountability purposes. Such systems identify, analyse, calculate, classify, record, and summarise environmental data, including data on environmental impacts of processes, products and services sold.

Environmental management system: the organizational structure, responsibilities, practices, procedures, processes and resources for implementing and maintaining environmental management (in order to control the environmental performance).

Environmental performance: an organisation's achievement in managing the relationship between full range of its activities and their significant environmental risks and effects.

Environmental report: a report, published by a company, in which the company informs the public on her environmental performance, and can include information on pollution, the use of (irreplaceable) natural resources and information on their efforts to reduce these environmental effects.

Feedback value: The quality of information that enables users to confirm or correct prior expectations. (FASB, 1980)

Materiality: The magnitude of an omission or misstatement of accounting information that, in the light of surrounding circumstances, makes it probable that the judgement of a reasonable person relying on the information would have been changed or influenced by the omission or misstatement. (FASB, 1980)

Material: relevant to the decision of the users of environmental information.

Neutrality: Absence in reported information of bias intended to attain a predetermined result or to induce a particular mode of behaviour. (FASB, 1980)

Predictive value: The quality of information that helps users to increase the likelihood of correctly forecasting the outcome of past or present events. (FASB, 1980)

Reporting principles: The organisation's policy in relation to obtaining, processing and reporting environmental information, including the various conventions in relation to amongst others measurement, calculation and presentation.

Relevance: The capacity of information to make a difference in a decision by helping users to form predictions about the outcomes of past, present and future events or to confirm or correct prior expectations. (FASB, 1980)

Reliability: The quality of information that assures that information is reasonably free from error and bias and faithfully represents what it purports to represent. (FASB, 1980)

Representational Faithfulness: Correspondence or agreement between a measure or description and the phenomenon that it purports to represent (sometimes called validity) (FASB, 1980)

Timeliness: Having information available to a decision maker before it loses its capacity to influence decisions. (FASB, 1980)

Understandability: The quality of information that enables users to perceive its significance (FASB, 1980)

Verifiability: The ability through consensus amongst measurers to ensure that information represents what it purports to represent or that the chosen method of measurement has been used without error or bias. (FASB, 1980)

Explanation to the definitions

Auditing can enhance in this definition more than only a verification of published data. The subject matter of the audit can for instance be the environmental management system with the audit objective the effectiveness of this system. Central is professional judgement, where as independence and expertise are the two fundamentals of this judgement.

Auditing is performed from a certain domain in the sense of a discipline. The domain shows the inherent limitations of the opinion due to the impossibility of being an expert in all disciplines.

Perhaps to clarify the confusion that exists among the terminology of auditing the following terminology could be used:

xxxxx auditing or xxxxx auditor : xxxxx is the domain from which the audit is performed and in which the auditor is an expert.

audit of yyyy: yyyy is the subject matter of the audit

An accountant would be an accounting auditor. In this thesis however the term accountant will be used for an auditor from the domain accounting. Since not all environmental experts are auditors conform the definition above the term environmental consultants will be used.

The opinion is expressed in a report. Although perhaps not all persons who have written these reports can conform the definition be regarded as an auditor, in this thesis the report that includes the opinion will be mentioned "audit report" for all the audits performed.

Abbreviations

AAA = American Accounting Association
ACCA = Association of Certified Chartered Accountants
AICPA = American Institute of Certified Public Accountants
BS = British Standard
CER = Company Environmental Reporting
CICA = Canadian Institute of Chartered Accountants
COSO = Committee of Sponsoring Organisations of the Treadway Commission
EIS = Environmental information system
EMAS = Eco-management and audit scheme
EMS = Environmental management system
FASB = Financial Accounting Standards Board
FEE = Fédération des Experts Comptables Européens
GRI = Global Reporting Initiative
IAPC = International Auditing
IAS = International Accounting Standards
IASC = International Accounting Standards Committee
ICC = International Chamber of Commerce
ISA = International Standards on Auditing
IISD = International Institute for Sustainable Development
IFAC = International Federation of Accountants
ISEA = Institute for Social and Ethical Accountability
ISO = International Organization for Standardization
RAC = Richtlijnen voor de Accountantscontrole
SAS = Statement on Auditing Standards
UN = United Nations
UNEP = United Nations Environment Programme
UN-ISAR = United Nations-Intergovernmental working group of experts on International Standards on Accounting and Reporting

Opinions included in the audit report

(direct quotations from the audit reports, but emphasis added, as shown in bold)

Anglian Water 1994 (PA Consulting Group)

“We find that the review properly reflects the environmental issues that are most relevant to the business. When appropriate data currently exists, it has been systematically collected and analyzed by Anglian Water.

In PA's opinion, the review provides a **fair reflection** of the environmental issues which face Anglian Water, and of the way in which those issues are being tackled.”

Body Shop International 1991/92 (Arthur D. Little)

“In our judgment the 1991-1992 Environmental Statement gives a **fair account** of the environmental issues of relevance. Facility management has also demonstrated to our satisfaction that it has systems in place or planned to monitor and improve performance in line with the requirements of the proposed Eco-Audit Regulation. In our opinion, The Body Shop's environmental review and initial statement **meet most of the requirements of the initial review of the proposed Eco-Audit Regulation (articles 3 and 5).**”

Body Shop International 1992/93 (Environmental Resource Management)

“Having examined The Body Shop's practices and procedures we can verify that The Green Book 2 gives an **accurate description** of the environmental activities on the Watersmead site and that the overall operating procedures are **consistent with the Eco-management and Audit regulation.**”

Body Shop International 1993/94 (Environmental Resource Management)

“It is apparent that The Body Shop **has integrated the requirements of the Eco-Management and Audit Regulation** in all activities on the Watersmead site. ERM is therefore in a position to verify that the Green Book 3 provides an **accurate reflection** of The Body Shop's environmental activities during the past audit year.”

British Airways 1994 (Arthur D. Little)

“This report **accurately assesses** the environmental effects of operations for the selected British Airways sites and activities and **accurately describes** the state of British Airways environmental management programs. In addition, the report is generally **consistent with annual environmental reporting methodologies** used within industry today.”

British Nuclear Fuels 1992 (GIBB Environmental)

“On the basis of our audit, we conclude that the 1992 Environmental Report provides a **fair and accurate reflection** of BNFL's known environmental status and performance during the period covered by the report.”

British Nuclear Fuels 1993 (GIBB Environmental)

“On the basis of our review we have concluded that the statements and data presented in the 1993 Environmental Report are a **valid representation** of BNFL's operations during 1993.”

British Nuclear Fuels 1994 (Ove, Arup & Partners)

“It is our opinion that the information presented in the 1994 Environmental Report is a **true representation** of BNFL's environmental performance during 1994.”

British Petroleum 1993 (Moret, Ernst & Young)

“We are satisfied that the information has been **properly collated from the data** produced by the individual businesses and that the statements made are **supported by** underlying information.”

British Telecommunication 1994 (Touche, Ross & Co., Management and environmental consultants)

“British Telecommunications has made reasonable endeavours to give a **fair and balanced disclosure** of all available information relevant to those topics where material.”

Ciba 1993 (Arthur D. Little) (German version translated)

In our opinion the **SEEP-system is appropriate** to provide a **reliable and representative picture** of Ciba's relevant environmental data....We have confirmed our view that using this data gathering tool, Ciba is now reporting over 90% of energy and water use and of all emissions (by weight)....Our limited review of the data confirms that the emissions of CO₂, SO₂ and NO_x are **consistent and reasonable** and provide an **open and fair view** of the emissions and solid waste. Data on other emissions to the atmosphere from production are less complete since fugitive emissions are not included in the totals of all sites.

Ciba 1994 (Arthur D. Little)

“The **SEEP-system is appropriate** for giving a **reliable, representative picture** of Ciba's environmental data worldwide....We have confirmed our view that using this data gathering tool, Ciba is now reporting over 90% of energy and water use and of all emissions (by weight)....Our review of the data collection and aggregation at the three sites confirms that emissions of CO₂, SO₂ and NO_x and special waste discharges are **consistent and reasonable**. Data on other emissions to the atmosphere from production are less complete since fugitive emissions are not included in the totals of all sites.”

Danish Steel Works 1992, 1993, 1994 (KPMG)

“We can confirm that the figures and information in the green accounts correspond to the data basis to which reference is made and which has been documented by us.”

Dow Europe 1993 (Arthur D. Little)

“The overall conclusion is that Dow Europe presents a balanced perspective on its environmental performance and that this performance is communicated openly and even-handedly. We believe that Dow Europe **includes** in its Report **virtually all relevant discharges** to air, water and waste removed from the site.”

Dow Europe 1993(KPMG Environmental Consulting)

“Based on our review **nothing came to our attention** that causes us to believe that the following statements **are not true statements of facts.**”

Dow Europe 1994 (Arthur D. Little)

“Based on this review and our previous experience with Dow Europe, we believe **systems** for collecting and communicating environmental performance data **are functioning well**, and demonstrate Dow Europe's commitment to continuous improvement in environmental performance.”

DSM 1993 (Deloitte & Touche)(Dutch version translated)

Based on our investigation we can declare that the environmental data presented in this report on pages 21-37 and 40-45 **were compiled with due care.**

DSM 1994 (Deloitte & Touche)

“Based on our investigation we can declare that the environmental data presented in this **report were compiled with due care.**”

Kemira Group 1994 (KPMG)

“Based on our review we have satisfied ourselves that the statements made in the report are supported by underlying information, that the data have been **properly collated from** information provided by the sites, that for the two sites visited, data have been **properly extracted from** information systems at site level and **proper records** have been maintained, and that **the report meets the overall requirements of the CEFIC Guidelines** on Environmental Reporting for the European Chemical Industry.”

National Power 1992 (Lloyd's Register)

“During the verification and validation of National Power's Environmental Performance review 1992, Lloyd's Register independently established that:

1. Presented data provided a **true and fair view**, with further work being needed in the areas of emissions to water and general waste;

2. Statements made provided a **true and fair view** with resources clearly being allocated to achieve National Power's stated objectives and targets;
3. National Power's internal verification activity was executed satisfactorily."

National Power 1994 (Lloyd's Register)

- "National Power's written statements in the 1994 EPR represent a **correct, true and fair picture** of their environmental policy, programmes and procedures.
- Commitment from the Chief Executive remained strong with environmental responsibility being developed clearly amongst the management hierarchy.
- The review of targets presented in 1994 EPR is a true reflection of the developments and improvements seen during this year's verification activity.
- Systems used to gather environmental data had been formalised and reviewed to ensure that all areas of concern were monitored.
- National Power's internal verification process remained satisfactory and formal systems had been implemented to ensure uniformity on areas/issues being inspected. Also methods for categorising impacts identified during audits had been developed.
- Collected and reported data presented a **true and fair picture** with regards to air emissions, water abstraction and returns, solid waste and complaints and incidents."

Neste 1994 (SustainAbility)

"Our main conclusions from the verification are:

1. the numerical data presented in the report appear to be **valid and accurate**;
2. the written statements about the data and Neste's performance during 1994 are **fair and honest**; and
3. the report is a **reasonable description** of the company's environmental policies, management systems, practices, and achievements in 1994."

Norsk Hydro 1993 (Lloyd's Register)

- "The sites all comply with existing legislation and consents where these exist.
- The figures in this report were found to give a **true and fair view** of existing monitoring data.
- The performance in the UK based on the criteria laid down in Environmental assurance is good, action and investment to reduce the environmental impact of its operations, environmental policy, consideration of environmental impact forms part of operations and of assessments for plant expansions."

Northumbrian Water (Aspinwall & Company)

"In our opinion, this report provides a **fair representation** of the environmental performance of the Northumbrian Water Group during 1993/94."

Novo Nordisk 1993 (SustainAbility)

“SustainAbility is satisfied that:

- the written statements presented in this report are a **fair and honest reflection** of Novo Nordisk's policies, management systems and practices;
- the numerical data are **valid and accurate.**”

Novo Nordisk 1994 (SustainAbility)

“Overall, SustainAbility is satisfied that:

- the written statements presented in this report are a **fair and honest** reflection of Novo Nordisk's policies, management systems and practices;
- the numerical data sampled are **valid and accurate.**”

Rhône-Poulenc 1993 and 1994 (Coopers & Lybrand)

“Based on the procedures we performed, in our opinion, the method of calculation of these three indices is **free of material error** and is **calculated on a basis consistent with that of the preceding year.**”

Rockwool 1994 (Moret, Ernst & Young Milieu) (Dutch version translated)

In our opinion the performance data in the environmental report 1994 of Rockwool Lapinus BV **truly and fairly presents the actual situation.**

Sandoz International 1994 (Arthur D. Little)

“On the basis of our review, we believe that the process at Group level is capable of **accurately consolidating** data from the sites.

We believe that the data in this report represent a **true picture with the following qualifications.**”

Severn Trent 1994 (Environmental Resource Management)

“We are **satisfied with the system** being developed to ensure the accuracy of the quantitative data used in the report. The environmental information system is still being developed and we have made suggestions for further improvement

We are satisfied that the Company has **accurately described** the progress with implementing its environmental management system and its action plan.

We are not aware of any inaccuracies in the qualitative statements on pages 5-26, although we have not verified them.”

Severn Trent 1995 (Environmental Resource Management)

“We are confident that the data presented in this report have been **collated properly**, and that the interpretations which have been made from these from these data are **accurate**. We have made a number of recommendations to further improve the information system which the Company is actively considering.

We are also satisfied that the company is **accurately representing** its progress in implementing its action plan set out in last year's report.”

Stadskwekerij 1993 (VB Accountants)(Dutch version translated)

The design of the EPR is **appropriate** to present the desired data.

Stortplaats de Sluiner(SDS) 1993 (Moret, Ernst & Young Milieu)(Dutch version translated)

- The part of the environmental management system concerning 'acceptance and monitoring' **complies with** the rules, regulations and guidelines.
- Besides some points in the beginning, the procedures concerning the part of the EMS concerning 'acceptance and monitoring' **have been performed satisfactorily**.
- The data in chapters 4 and 5 of the ER truly and fairly presents the actual situation.

Thorn EMI (Aspinwall & company)

“We believe that this report **appropriately focuses** on Thorn EMI's main environmental issues. Where accurate data on specific issues is not readily available, estimates have been used or the information has been omitted from the data. This is clearly stated at the appropriate points in the report.”

Tioxide Group 1994 (Det Norske Veritas)

“DNV find the Tioxide Group Environmental Performance Report for 1994 a **suitably accurate and comprehensive assessment** of the significant routine operational releases and energy consumption at the Tioxide manufacturing sites and research facility.

DNV consider that Tioxide's existing monitoring and reporting system **represents good practice** and is in itself worthy of commendation.”

Welsh Water 1993/94 (Acer Environmental)

“Acer Environmental concluded that the written statements in the 1993/94 Dwr Cymru Environmental Report represented a **correct, true and fair picture** of their environmental policy, programmes and procedures. The reported data were also considered to represent a **true and fair picture** particularly with regard to water resources, drinking water quality, sewage effluent consent compliance, conservation and equipment and practices associated with the wider environment. Also considered to be **accurate** were the statements and data on expenditure for the provision of improved water and sewerage services.”

Yorkshire electricity undated (Environmental Resource Management)

“ERM has examined the contents of this Review, relevant data/calculations and other supporting documentation and **can verify their completeness and accuracy**.”

Contents of audit reports made by verifiers (EMAS):

Akzo Nobel Site Gillingham (June 1995) Bureau Veritas Quality International

Chapter 1-4 have been verified by Bureau Veritas Quality International with the following declaration:

"On the basis of the documentation, data and information resulting from internal procedures examined during the verification process at Akzo Nobel Chemicals Ltd (site Gillingham), it appears that the Environmental Policy, Programme, Management System, Review and Environmental Statement meet the requirements of the EMAS Regulation."

STORA Kabel (1-9-1995) and Hoechst Trevira (6-9-1995): Lloyd's Register Quality Assurance:

"Based on based on spot checks on sites, interviews, documents, data and received information Lloyd's Register Assurance Limited came to the conclusion that:

- the environmental policy, programme, the method of the environmental review and audit of the environmental management system, the environmental management system and the environmental statement comply with the requirements of EMAS-Regulation 1836/93;
- the data and written statements (information) in the above mentioned environmental statement are reliable and that all for the site relevant and significant environmental aspects are shown in an adequate way".

Phoenix-Trykkeriet A/S (9-10-1995) and Salomon & Roussell A/S (10-10-1995) by Det Norske Veritas Denmark:

Verification:

"Det Norske Veritas Denmark A/S, Department for certification of management systems, hereby verifies that Phoenix-Trykkeriet A/S through

- an environmental review
- a documented and implemented environmental management system, and
- the present publicly available environmental statement
- fulfils the conditions of "Council regulation (EEC) no. 1836/93 of June 29th 1993 allowing voluntary participation by companies in the industrial sector in a Community Eco-Management and Auditing Scheme"(EMAS)"

Viessmann Werke GmbH (22-9-1995) Dr. Werner Wolfarth

"We validate this environmental statement".

Canon Giessen GmbH (10-10-1995) Dr. jur. Fritz H. Meckel

"We validate this environmental statement".

Questionnaires used in the survey

Questionnaire sent to those companies which published an audited environmental report

General information

Name of your company:

Description of the engagement of the verifier

* subject matter (What was the verification about ?):

(Tick as many boxes as you like)

- quantitative data in the environmental report
- quantitative data and explanation of the data in the environmental report
- quantitative data, explanation of the data and qualitative data (e.g. about the environmental management system)
- environmental information system
- (part of the) environmental management system
- other, please describe

* objective of the engagement (What was the purpose of the verification?):

(Tick as many boxes as you like)

- true and fair view
- compliance with EMAS
- legislation compliance
- adequateness of the environmental information system
- other, please describe

* criteria to be used to assess if the objectives are met:

(Tick as many boxes as you like)

- EMAS
- BS 7750
- CEFIC-guidelines
- fifty point checklist UNEP
- ICC guidelines
- other, please describe

Questions (1 to 8)

1. Could you please indicate the relative importance of the following factors in giving an independent firm the engagement to verify (a part of) your environmental report?

	(1)very important	(2)quite important	(3) neutral	(4)of little importance	(5)not important
Emphasise the reliability (working towards) EMAS					
Compliance with other regulation/guidelines					
Pressure from:					
- shareholders					
- external financiers					
- employees/labour unions					
- customers					
- environmental groups					
- local residents					
Contribution to the image of the company					

2. Could you please indicate the relative importance of the following factors in the choice of the firm that verified your environmental report?

The firm:	(1)very important	(2)quite important	(3) neutral	(4)of little importance	(5)not important
Advised in implementing environmental management system					
Audits the company's financial statements					
Verifies environmental reports of other companies within industry					
Is known to have a helpful attitude					
Operates internationally					
Is one of the big six audit firms					
Has environmental expertise					
Has accounting and auditing expertise					
Has an acceptable cost-planning					

3. What did you expect from the verification?

Expectation:

1= very important 2= quite important 3= neutral 4= of little importance

5= not important

Expectation	level important
	1,2,3,4,5
Opinion and advice on the adequacy of the design of the environmental report	
Opinion on the completeness of the disclosure	
Detect errors in environmental performance data	
Detect errors in the written statements	
Detect deficiencies in the environmental information system, including the internal controls	
Opinion on the work performed by the internal audit team	
Detect emissions that were not reported	
Detect environmental fraud committed	
Detect non compliance with environmental legislation that applies to the company	
Advice on the environmental management system	

4. Who do you think the users of your environmental report are thought to be? (Tick as many boxes as you like)

0 regulators 0 shareholders 0 employees/labour union

0 local residents 0 consumers 0 environmental groups

0 external financiers 0 other

5. To what extent were you able to influence the wording of the expert statement from the verifier?

0 completely 0 relative large influence 0 neutral

0 almost no influence 0 not at all

6. Did you receive any comments from the users of your environmental report regarding the wording of the expert statement from the verifier? If so, please describe.

7. What level of assurance of the following statements is in your opinion provided by the expert statement of the verifier?

1= complete assurance 2= almost full assurance 4= almost no assurance 5= no assurance	3= neutral	level of assurance
		1,2,3,4,5
The view presented by the environmental information as a whole corresponds with the environmental issues of the company		
Full disclosure of all material matters relevant to the proper presentation of the environmental information		
The information is presented adequately and in a consistent way		
The information presented contains no material misstatements		
The substances as reflected in the environmental performance report correspond with the real polluting substances emitted		
The environmental information system, including the internal controls are adequate to provide reliable information		
No environmental fraud has been committed by the company		
The company complies with environmental legislation		
The environmental management system is effective		
The company continuously improves its environmental performance		

8. In general, i.e. not with regard to the questions above or your environmental report, if the statement 'the environmental report gives a true and fair view' is given by an independent verifier the following assurance is given:

1= complete assurance 2= almost full assurance 4= almost no assurance 5= no assurance	3= neutral	level of assurance
		1,2,3,4,5
The view presented by the environmental information as a whole corresponds with the environmental issues of the company		
Full disclosure of all material matters relevant to the proper presentation of the environmental information		
The information is presented adequately and in a consistent way		
The information presented contains no material misstatements		
The substances as reflected in the environmental performance report correspond with the real polluting substances emitted		
The environmental information system, including the internal controls, is adequate to provide reliable information		
No environmental fraud has been committed by the company		
The company complies with environmental legislation		
The environmental management system is effective		
The company continuously improves its environmental performance		

Questionnaire sent to the professionals that audited the environmental report.

General information

Name of your firm:

Name of the company on whose environmental report an opinion was given:

Year of the environmental report:

Kind of expertise of the auditors that performed the verification of the environmental report:

environmental consultant

management consultant

public accountant

technician

scientist

other, please describe

Description of the engagement:

* subject matter:

quantitative data in the environmental report

quantitative data and explanation of the data in the environmental report

quantitative data, explanation of the data and qualitative data (e.g. about the environmental management system)

environmental information system

(part of the) environmental management system

other, please describe

* objective of the engagement:

true and fair view

compliance with EMAS

legislation compliance

adequateness of the environmental information system

other, please describe

* criteria used to assess if the objectives are met:

EMAS BS 7750

CEFIC-guidelines fifty point check-list UNEP

ICC guidelines

other, please describe

Questions

1.a. Could you please indicate the level of importance, in your opinion, of expectations that users of environmental reports have of your verification of (a part of) the environmental report? (1,2,3,4,5)

1.b. Could you please indicate how users of environmental reports may interpret your expert statement? (A, B, C, D, E) provided by the expert statement of the verifier?

Expectation: Assurance:
 1= very important A= complete assurance
 2= quite important B= almost full assurance
 3= neutral C= neutral
 4= of little importance D= almost no assurance
 5= not important E= no assurance

Expectation	level of importance	level of assurance
	1,2,3,4,5	A,B,C,D,E
The view presented by the environmental information as a whole corresponds with the environmental issues of the company		
Full disclosure of all material matters relevant to the proper presentation of the environmental information		
The information is presented adequately and in a consistent way		
The information presented contains no material misstatements		
The substances as reflected in the environmental performance report correspond with the real polluting substances emitted		
The environmental information system, including the internal controls, is adequate to provide reliable information		
No important environmental fraud has been committed by the company		
The company complies with environmental legislation		
The environmental management system is effective		
The company continuously improves its environmental performance		

2. Have you shown in your expert statement that not all expectations can be fulfilled?

0 no

0 yes, by describing:

- 0 the audit work performed
- 0 the limitations of the audit
- 0 the objective of the audit
- 0 the subject matter of the audit
- 0 other way, please describe

3. If during your work you encountered any uncertainties or limitations on the scope of your verification, did you report these uncertainties and limitations?

0 no

0 yes, by:

- 0 describing the limitations or uncertainties
- 0 by expressing a moderate level of assurance in the opinion
- 0 describing the work not performed

4. Could you please indicate the level of importance, in your opinion, of the expectations that the company that engaged your firm to verify (a part of) their environmental report may have of your verification?

1= very important 4= of little importance	2= quite important 5= not important	3= neutral	expectation
			1,2,3,4,5
Opinion and advice on the adequateness of the design of the environmental report			
Opinion on the completeness of the disclosure			
Detect errors in environmental performance data			
Detect errors in the written statements			
Detect deficiencies in the environmental information system, including the internal controls			
Opinion on the work performed by the internal audit team			
Detect emissions that were not reported			
Detect environmental fraud committed			
Detect non compliance with environmental legislation that applies to the company			
Advice on the environmental management system			

5. In general, i.e. not with regard to the questions above or your expert statement, a statement that 'the environmental report gives a true and fair view' means:

1= complete assurance 2= almost full assurance 3= neutral 4= almost no assurance 5= no assurance	level of assurance
	1,2,3,4,5
The view presented by the environmental information as a whole corresponds with the environmental issues of the company	
Full disclosure of all material matters relevant to the proper presentation of the environmental information	
The information is presented adequately and in a consistent way	
The information presented contains no material misstatements	
The substances as reflected in the environmental performance report correspond with the real polluting substances emitted	
The environmental information system, including the internal controls are adequate to provide reliable information	
No environmental fraud has been committed by the company	
The company complies with environmental legislation	
The environmental management system is effective	
The company continuously improves its environmental performance	

Information available in verbal protocol analysis

Research subjects had the following information available in an information file;

- 0 Contents
1. Description of the organisation, structure and location:
 - a. chemicals company, operating world-wide
 - b. kind of products
 - c. organisation of the QHSE department
 - d. organisation graph
 - e. picture of the location
2. Description of the production process
 - a. descriptive and graphic overview of the input, output, emissions and the process
3. Permits
 - a. Overview of the permits and the thresholds and reporting requirements
4. Developments in the field
 - a. Responsible care programme
 - b. BMP
 - c. Chlorine, the production of chlorine is being discussed. Research shows that the risks can be controlled. The chlorine industry is working together with the ministry to reduce the risks of chlorine.
 - d. Mercury, the use of mercury is also being discussed. In future, this may lead to closing the plants that work with mercury.
5. Characteristics of hazardous substances used by this company
6. Environmental policy
 - a. Overview of the environmental policy and the process of setting up this policy (which aspects are taken into consideration, e.g. environmental laws, permits, agreements with the government, result of risks analysis)
7. Environmental plan
 - a. Overview of quantitative targets and intended environmental measures
8. Management and personnel
 - a. Stimulating role head QHSE
 - b. Management meetings
 - c. Financial implications for managers based on environmental performance
 - d. Close relationship between employment and environmental effects
 - e. Competence and involvement
9. Description of the organisation of the EMS
 - a. General approach
 - b. Not certified yet, but the company is in the process of certification
 - c. Documentation procedures

10. Description of the process of the environmental information system:
 - a. Primary registration (measurements)
 - b. Laboratory analysis of samples
 - c. Data collection and processing
 - d. Reporting
11. Internal control: preventive measures such as segregation of duties, task descriptions, norms, instructions, procedures and repressive measures such as a mass balance, comparisons
12. Internal control of Mercury
13. Internal control of MCA
14. Internal control of CFK
15. Internal control of waste
16. (Internal) audit of the EMS, approach and results
17. Quantitative data on environmental performance
 - a. Quarterly data and standards and reference to measures described in the environmental plan
18. Environmental investments
19. Complaints and incidents
 - a. Number of complaints, complaints procedure and description of complaints and incidents in 1996
20. Soil pollution
 - a. State of the art of existing soil pollution researches on the site

Risks identified

Table A 6.1 provides an overview of the risks identified by each research subject

Table A 6.1 – Risks identified

	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
<i>I. General</i>										
Governmental policies					x					
Competition					x					
<i>II. Industry-specific</i>										
Chlorine and mercury are being discussed and have the attention of news media and government	x	x		x						
Characteristics of the substances			x							
<i>III. Entity specific</i>										
Location: near the residential area, the open water and site of waste disposal	x						x	x		
Changes in the business process					x					
Environmental objectives are not specified	x									
No overview of the environmental aspects of processes	x									
<i>IV Management</i>										
Internal promotion as a result of environmental performance					x					
Environment is not seen as their core business						x				
Unrealistic targets					x					
Plant managers are able to adjust the figures										x
Management (responsibility in the line) does not use the information from EIS, they have their own sources	x									
<i>V Internal control</i>										
The process of environmental information is not described in the EMS manual		x								
Insufficient procedures and working instructions									x	
Compliance with procedures									x	
No adequate segregation of duties		x		x	x	x				
No separate checking function										x
No audit trail								x		
Time span between the audit of the EMS and the corrective actions									x	

	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
Complaints				x						
Emissions during incidents				x		x				
Be silent on certain incidents						x				
Risk of fraud						x				
<i>Measurement</i>										
Representativeness of the measurement points							x	x		
Balance between emission points measured and the diffuse emission points, and the places where there are seals, pumps and other safety measures in pipes								x		
Frequency of the measurements		x						x	x	
Risks that are inherent in methods of measurement			x							
Reliability of the measurement equipment/calibration				x					x	
Functioning of the measurement equipment				x						
Temperature and pressure influence on the measurement results				x						
Tolerances of measurements			x							
Errors in measurements			x		x					x
People can measure until they get the wanted result					x					
Use of measurement methods and techniques without evaluating whether a change in circumstances has to lead to the need of a different approach					x					
Knowledge of the people that perform the measurements					x					
Inaccurate registration						x	x			
Corrections made in the emission data								x		
Disruptions which mean that there are no measurement data								x		
No documentation of acceptable deviations in measurements										x
Not all sources are taken into account					x					
Variance in data due to tolerances									x	
<i>Analysis</i>										
Errors in the analyses										x
Battle of prices between laboratories							x			
Name and reputation of the company that performs the analysis						x				
Certified methods of analysis (STER)				x						
No links between the different information systems within the company				x		x				

	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
Representativeness of the analyses								x		
Errors in taking and preparing the samples								x		
<i>Data processing</i>										
Data entry manual	x					x				
No manual check on data input	x	x							x	x
No check on data input within the software		x								
Accuracy of data processing		x				x				
Completeness of the data to be entered in the system		x					x			
Data relates to different reporting periods but this is not recognised					x					
Errors due to the fact that measurements are made in micrograms and reporting in kilograms or from milligrams to m ³										x
Round off which causes small quantities to be zero		x								x
Consolidation procedures are lacking or are unclear					x					
Use of different calculation methods every year					x					
Errors in calculations					x					
Inconsistencies in calculations						x				
Calculation models never fit perfectly								x		
Inaccurate passing on of emissions					x					
Transformation errors					x					
Accountant has no insight into the completeness and accuracy of the data he/she receives										x
Inappropriate conclusions from the figures					x					
<i>VI Report specific</i>										
Parameters may not be complete to represent a complete view			x							
Lack of generally accepted international reporting standards			x							
Only the data of 1995 are subject to audit			x			x				
Risk of window-dressing e.g. manipulation of data in the report in order to match competitors					x	x				
Many different indicators are possible					x				x	
Bias in reporting to emphasise the good					x					
Unclear definitions					x					
Boundaries of reporting entity difficult to establish and unclear					x	x				

	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
<i>VII Account specific</i>										
Deviations in waste		x								
Segregation of duties for waste			x	x						
Unreliable information on waste processing (burning or depositing)						x				
Registration of waste no core activity of the company										x
Tar-ra-weightings and lack of calibration may cause errors in weighing waste (systematic error)										x
MCA is not reported quarterly		x								
Non-official purchase of mercury				x						
Mercury is a substance on the blacklist								x		
Mercury emissions during the burning of waste from the filters				x						
Mercury emissions almost do not fit within the measurement scope of the equipment								x		
Measurement problems of emissions to air								x		
Huge pipe for air emissions										x

Audit reports analysed

Table A. 7.1 – Audit reports analysed

Name of the company	Country	Period covered	Name of the audit firm
Anglian water	UK	1997	Aspinwall & Company
ASG	Sweden	1997	SustainAbility
Bayer	Germany	1997	Arthur D. Little
Biffa	UK	1997/98	SGS Yarsley
Body Shop	UK	1995/7	BSI
British Airways	UK	1997	Aspinwall & Company
BAA Gatwick	UK	1997/98	Entec
BAA Heathrow	UK	1997/98	Entec
BAA Scottish Airports	UK	1997/98	Entec
British Nuclear Fuel	UK	1997/98	Det Norske Veritas
British Petroleum	UK	1997	Ernst & Young
British Steel	UK	1997	Aspinwall & Company
British Telecommunications	UK	1997/98	Det Norske Veritas
Coats Viyella	UK	1997	Deloitte & Touche environmental consultants
Credit Suisse Group	Switzerland	1997/98	SGS-ICS
Cultor	Finland	1997	ERM
Danfoss	Denmark	1997	Danish Standards Association
Det Danske Salvalsevaerk	Denmark	1997	KPMG
DONG	Denmark	1997	KPMG
DSM	Netherlands	1997	Deloitte & Touche Eco Audit
Eastern Group	UK	1997/8	CQA
EMI Group	UK	1997	Aspinwall & Company
ENI	Italy	1997	Dames & Moore International
Glaxo Wellcome	UK	1997	ERM
Imperial Chemical Industries	UK	1997	KPMG
ING Group	Netherlands	1997	KPMG Management Consulting
IVO	Finland	1997	Coopers & Lybrand
Kemira	Finland	1997	KPMG
Mannheimer Versorgungs- und verkehrsgesellschaft	Germany	1997	KPMG Certification
National Grid	UK	1996/97	KPMG
National Power	UK	1997/8	Lloyd's Register QA
Neste	Finland	1997	SustainAbility
Norsk Hydro	Norway	1997	Deloitte & Touche
Norske Skog	Norway	1997	Deloitte & Touche

Nothumbrian Water Group	UK	1997	Aspinwall & Company
Novartis	Switzerland	1997	SustainAbility
Novo Nordisk	Denmark	1997	SustainAbility
Novo Nordisk	Denmark	1997	Deloitte & Touche
Otto Versand	Germany	1997	KPMG Certification
Powergen	UK	1997	Electricity Association QA
Rhone-Poulenc	France	1997	Coopers & Lybrand Cons
Rio Tinto	Australia/UK	1997	Arthur D.Little
Rockwool Lapinus	Netherlands	1997	Ernst & Young man. Cons.
Royal Dutch/Shell	NL/UK	1997	KPMG/PricewaterhouseCoopers
Deutsche Shell	Germany	1997	Dr. Ulrich Hopfner
Nederlandse Aardolie Maatschappij (NAM)	Netherlands	1997	KPMG Management Consulting
Shell Int. Petroleum Co.	UK	1997	KPMG+PricewaterhouseCoopers
Shell Nederland Chemie Moerdijk	Netherlands	1997	KPMG Management Consulting
Shell Pernis Chemie en Raffinaderij	Netherlands	1997	KPMG Management Consulting
Shell UK	UK	1997	Lloyd's Register QA
Sainsbury	UK	1997/8	PricewaterhouseCoopers
SAS group	Sweden	1997	Deloitte & Touche
Scan Farmek Ec. Association	Sweden	1997	KPMG environmental advisors and KPMG Bohlins
ScottishPower	UK	1997/98	Aspinwall & company
Statoil-Den Norske stats Oljeselskap a.s.	Norway	1997	Ernst & Young
Stora Koppabergs Berlags	Sweden	1997	KPMG
Stortplaats de Sluiner	Netherlands	1997	Deloitte & Touche Eco Audit
Tele Denmark	Denmark	1997	PricewaterhouseCoopers
Teollisuuden Voima Oy	Finland	1997	Det Norske Veritas
Thames Water	UK	1997/8	Aspinwall & Company
Tioxide Group	UK	1997	Det Norske Veritas
Triodos Bank	NL	1997	KPMG Management Consulting
Unilever	NL/UK	1997	Aspinwall & Company
Unisor	France	1997	PricewaterhouseCoopers
Volkswagen	Germany	1996	KPMG Certification
Yorkshire electricity	UK	1996/7	Aspinwall & Company
Yorkshire Water	UK	1997/98	Aspinwall & Company

Entries for the EERA Awards

Table A 7.2 – Entries for the EERA Awards

EERA 1996 (a total of 13 from 3 participating countries)	EERA 1997 (a total of 20 from 7 seven different European countries in 14 different industries)	EERA 1998 (a total of 21 from 6 participating European countries)
AZU Hospital (Netherlands)	ASG (Sweden)	Anglian Water (UK)
British Airways (UK)	BT (UK)	Borealis (Belgium)
Brodrene Hartmann (Denmark)	Det Danske Stalvalsevaerk (Denmark)	BAA (UK)
Danfoss (Denmark)	DSB/Banestyrelsen (Denmark)	Banestyrelsen (Denmark)
Dow Benelux (Netherlands)	Electralabel (Belgium)	Coloplast (Denmark)
ELSAM (Denmark)	Gemeentelijke Dienst Afvalverwerking (Netherlands)	Co-operative Bank (UK)
ING Bank (Netherlands)	Glaxo Wellcome (UK)	DONG (Denmark)
Inveresk (UK)	HIPP (Germany)	DSB (Denmark)
J. Sainsbury (UK)	Hoogovens Staal (Netherlands)	Eastern Group (UK)
London Electricity (UK)	Kunert (Germany)	Electricité de France (France)
Novo Nordisk (Denmark)	MoDo (Sweden)	Groupe EMC (France)
Rockwool international (Denmark)	Novo Nordisk (Denmark)	Henkel KgaA (Germany)
Shared Earth (UK)	NSK-RHP (UK)	Mannheimer Verkehrs- und Versorgungsbetriebe (Germany)
	Petrofina (Belgium)	NAM (Netherlands)
	Rhone-Poulenc (France)	Neumarkter Lammsbräu (Germany)
	Salua-Haus (Germany)	Novo Nordisk (Denmark)
	SAS (Denmark)	Otto Versand (Germany)
	Tessengerlo Chemie West-Limburg (Belgium)	Rhone-Poulenc (France)
	Unimerco (Denmark)	SAS (Denmark)
	AB Volvo (Sweden)	Vauxhall Motors (UK)
		Volkswagen AG (Germany)

Source: EERA judges reports 1996/97, 1997/98, 1998

Details on the process of auditing environmental reports

A. Understanding the client's business

Evidence that can be obtained includes⁵⁴ information on:

(1) Management and ownership-important characteristics:

- Scope of the reporting entity and reporting period;
- Form of ownership and corporate structure;
- Organisational structure (how is the responsibility for environmental issues set within the organisation);
- Management characteristics;
- The environmental policy, environmental programme; and
- Major environmental management decisions

(2) The company's business-products, markets, suppliers, expenses, operations

- Nature of the business;
- Most important products and services and nature of markets;
- Countries in which the organisation operates;
- Kind of processes;
- Supply chain;
- Environmental aspects of the processes, products and services;
- Applicable legislation and regulations (including industry regulations) and covenants;
- Environmental licences and related measurement, registration and emission requirements;
- Environmental licenses, scope, when they were issued and will expire;
- Incoming and outgoing flows of goods, including energy, waste and emissions;
- Environmental effects caused by products and services;
- Structure of correspondence with authorities including the environmental inspection officers; and
- Other forms of publications e.g. financial report, social report.

Audit techniques that can be used to obtain the evidence include:

- Interviews with the management responsible for environmental management and the environmental report, the board of directors, plant managers and members of staff, including the environmental co-ordinator(s);
- Observation of the business activities and processes to identify key physical features and locations where potential pollution is generated, treated, stored and disposed of;

⁵⁴ This information is based on ISA, the results from chapter 6 and the discussions on development of an audit protocol for an audit firm.

- Review of documents produced by the entity such as organisational charts and related names; map of the location; process flow diagrams and process descriptions; plant lay out including sewer diagrams, waste storage areas, setting ponds, active and abandoned landfill areas, minutes of meetings, reports to the bodies granting licences, internal environmental reports, information brochures for neighbours, manuals on the environmental management system (including the environmental policy plan);
- Interviews with industry specialists to gain an understanding of the completeness of the information obtained from the entity/location;
- Collection of publications on the location and the industry in general.

Sources of information include:

- Organisational charts and related names;
- Map of the locations;
- Process flow diagrams and process descriptions;
- Plant lay out including sewer diagrams, waste storage areas, setting ponds, active and abandoned landfill areas;
- Minutes of management meetings;
- Environmental laws and regulations;
- Covenants and other voluntary environmental initiatives;
- Licence requirements;
- Reports to the bodies granting licenses;
- Correspondence with authorities, including the environmental inspection officers;
- Environmental risk assessments performed by the company such as those for instance documented in an impact register;
- Internal environmental reports;
- Information brochures for neighbours;
- The environmental policy plan;
- Manuals on the environmental management system.

B. Estimating the inherent risk

Evidence from chapter 6 and existing literature (IFAC/IAPC, 1998; ICC, 1991, and EAC, 1999) suggest that the estimation of the inherent risk may include the evaluation of:

- Most important changes in size, structure and ownership;
- Management's experience and knowledge and management changes during the reporting period;
- Unusual pressure on the entity's management (e.g. unrealistic targets), variable management rewards for environmental performance, promotion as a results improved environmental performance and other circumstances in which management is inclined to make misstatements in the environmental report, for example, by presenting a more rosy picture;
- The environmental improvements made by management so far;
- The nature of the entity's business activities and their impact on the environment;

- Factors that influence the entity's industry, for example, economic and competitive developments, changes in government policy, technological developments;
- Pressures within the market in which the company operates;
- Items in the environmental report that are sensitive to errors (e.g. estimates);
- The tolerances of specific items;
- The possibilities of illegal dumping/discharge of certain substances/waste/emissions;
- The entity's sites and locations (e.g. near residential area?);
- The risk of fraud in relation to certain substances and waste;
- Violations of environmental laws and regulations;
- Complaints that the entity received in relation to environmental effects;
- Recycling/incineration of waste at the site;
- Composition of waste;
- Storage of waste at different sites;
- Environmental performance of contractors on the site;
- Extraction of water;
- Incidents and accidents;
- Disruptions in the system which deactivates automatic recordings of emissions;
- Special events such as temporary shut down of activities e.g. due to maintenance;
- Changes in the business process;
- Changes in the supply chain;
- Changes in the means of production;
- Changes in products and services;
- Changes in the measurement equipment;
- Procedures to estimate the environmental consequences of new projects; and
- The company's environmental risk estimates.

C. Gaining an overall understanding of the internal control system

In obtaining such overall understanding the following evidence in general may be obtained⁵⁵:

- description of the internal control system insofar as is deemed necessary for evaluating the reliability of information in the environmental report:
- the control environment: management's integrity, general attitude towards integrating the environment in the core business, management's attitude and active involvement in the environmental information system and internal controls and their importance to the entity
- the management's risk analysis, especially in relation to the reliability of environmental information;
- the process of information and communication;
- the way in which information for the environmental report is collected and collated;

⁵⁵ The results from chapter 6 and the discussions within the environmental consultancy department of an audit firm were used to adapt the approach of the COSO-report (1994) to the environmental field.

- the measurement unit and indicators used to express environmental performance such as emissions and discharges;
- information on measurements: location, frequency, laboratory analysis of samples;
- information on flows that are used to calculate to total amount of emissions;
- information on calculations and the methods used;
- information on estimates and assumptions made and the basis of those assumptions;
- the way in which data are recorded;
- the way in which data are related to each other, the way in which data are processed for presentation in the environmental report;
- internal communication on preparing the environmental report;
- the method of consolidation; and
- dialogue with stakeholders.
- the entity's control activities:
 - procedures for measurements, laboratory analysis for samples measured, calculations and estimates;
 - segregation of duties;
 - audit trail;
 - procedures for making, evaluating and approving reconciliation between records made by different members of staff;
 - procedures for checking the arithmetical accuracy of records, calculations and analyses;
 - approvals and checks on documents;
 - comparison of internal data with external information sources;
 - reconciliation of weightings of waste with waste records;
 - comparisons and analyses of environmental performance with objectives and the environmental programme;
 - mass balances of substances or processes; and
 - procedures for recording emissions of incidents and accidents;
- the monitoring process:
 - results of internal reviews of the environmental management system;
 - reactions to signals from the environmental management system.

Techniques to collect evidence on the entity's internal control procedures include:

- interviews in order to obtain information from directors, management and other members of staff, including the environmental co-ordinator(s) and the internal environmental audit team;
- making observations of the business activities and processes;
- documentary studies; and
- performance of a limited verification against documents and records.

Sources of information include:

- description of the process of measurements, recording and reporting in the environmental management system manual;
- records of measurement and sampling techniques;
- production accounts;
- documentation of responsibility and procedures for measurement and sampling techniques;
- taxes (water discharge);
- invoices from waste collectors/processors;
- soil contamination reports;
- correspondence with public/competent authorities, where applicable; and
- invoices for water, electricity and gas consumption.

D. Initial estimate of the internal control risk

The initial estimation of the internal control risk involves an evaluation of whether the five aspects of internal control are adequate within the entity. These include the following;

Aspects of importance for the initial estimate of the internal control risk:

1. the control environment

This includes an evaluation of:

- integrity and ethical values of management and personnel;
- the value placed on competence;
- the attitude and conduct of management towards the environment (e.g. the integration into its core business);
- structure of the organisation;
- delegation of responsibilities and powers; and
- personnel policy.

2. the client's risk control procedures

This includes an evaluation of:

- the procedures used by the entity to identify risks;
- the risks identified by the entity in respect of environmental objectives at a business level, including the reliability of environmental information;
- the risks identified by the entity in respect of environmental objectives at an activity level, including the reliability of environmental information; and
- the way in which the entity responds to change.

3. information and communication systems

This includes evaluation of:

- the adequacy, timeliness and detail of management reports;
- the degree to which the environmental and information system is linked to the entity's strategic environmental policy and programme;

- communication channels within the entity and with third parties, such as suppliers, customers and public bodies;
- the guidelines on the recording and processing of data;
- the guidelines on the period being reported upon (matching principle);
- the guidelines for the content of the environmental report;
- whether measurements are representative (places and frequency);
- the completeness of the emission points and their quantity in relation to the fugitive emission points at seals, pumps and pipes;
- application of generally accepted measurement and recording methods;
- the variance of data due to tolerances of measurements and the factors such as temperature and pressure that influence the measurement results;
- the application of generally accepted methods for the extrapolation of emission measurements into annual figures;
- the risks inherent to methods of measurement;
- the diffuse emissions in relation to the emissions measured;
- the links between the different information systems.

4. *the internal control activities*

This includes evaluation of:

- the segregation of duties, especially between management, measuring, recording and monitoring and the existence of related access controls for the electronic data processing system;
- the system for authorisations;
- the procedures and working instructions in relation to environmental aspects of the business processes e.g. the environmental risk analysis, the measuring and reporting environmental performance and the handling of waste;
- the existence of norms and standards;
- the existence of an audit trail;
- the reliability and functioning of measurement equipment e.g. the calibration;
- the competence of the people performing the measurements and laboratory analysis;
- the spread in measurements;
- the continuous operation of automatic measurement equipment;
- the procedures for disruptions in the automatic recording system;
- the procedures for adjusting measurement results;
- the procedures for rounding in relation to concentrated emission data;
- the quality of the laboratory and the scope of the certification of analysis methods and of the laboratory processes;
- the procedures in place for the entry of measurements in the emission records, including procedures to check the accuracy of the data entry;
- the procedures to check the reliability of calculations;
- the accuracy of the data processing (e.g. the reliability of the software used, built-in controls);

- the existence of physical precautions (e.g. physical safety systems and alarms);
- the procedures in place governing any departures from the guidelines, including procedures for and the documentation of incidents;
- the existence of ex ante calculations e.g. for emissions to air;
- the internal analysis of the relation between incoming and outgoing flows (mass balances); and
- the internal analysis of deviations of actual performance from norms, standards or ex ante calculations.

It also includes evaluation of internal control activities in relation to waste, such as:

- the existence of locked storerooms/containers for dangerous waste;
- the existence of stock records kept for waste products or hazardous substance used in the production process (such as mercury);
- the existence of procedures in place to count waste stocks and hazardous substances used in the production process. In practice, waste counts are not common. Waste is rarely retained long enough to justify a stock-take, which can be reconciled with waste records. Instead waste tends to be removed by contractors on a regular basis with volumes evaluated either in terms of ship loads or measured by the collection vehicle passing over a weighbridge. These could be observed instead;
- the existence of regular reconciliation between physical stock count and stock records;
- the procedures for waste stored at places outside the location;
- the reconciliation made between the waste records and the production records, the quantity and type of waste collected by third parties and the quantity and type of waste according to the invoices issued by the collector or processor;
- the analysis of waste analysed by certified laboratories;
- procedures for waste in relation to the release to authorised collectors and/or processors;
- the use of EU support documents for the release of waste transported to foreign countries;
- the procedures in place to record exceptional quantities of waste and results of incidents;
- the procedures in place for the incineration of waste.

5. *Monitoring*

This includes the evaluation of:

- management reviews of results in relation to the objectives and environmental programme, previous periods and information from other entities in the same industry;
- the way in which significant initiatives are monitored;
- management reviews of production reports with regard to areas of responsibility;
- monitoring whether the measurement, calculation and estimation methods are still adequate;

- evaluating the internal audit function: its position in the organisation structure, its independence and expertise and, the internal auditor's work performed; the nature and feedback of reporting, and follow-up actions on recommendations.

Examples of procedures performed during the inspection stage

a) General

- Examination whether all policy requirements lead to internal control activities;
- Examination whether responsibility for measurement, analysis and recording is properly documented;
- Personal observation, to examine that there are written instructions for measurement, recording and analysis and that the company has implemented procedures for monitoring compliance with those instructions;
- Examination of the documentation of the information process in the environmental management system manual;
- Personal observation to establish that unambiguous definitions are formulated for atmospheric emissions and that the definitions are applied or that the company has implemented procedures to enforce application of the definitions;
- Tests of control aimed at examination of compliance with instructions and procedures, both for regular activities and for complaints and incidents;
- Examination of the corrective actions as a result of incidents, complaints, deviations from norms and internal audits;
- Establishing that hazardous waste is stored in an adequately and appropriately;
- Following the audit trail for the main flows, relevant emissions and waste;
- Checking for every type of document, of a number of documents as to whether internal controls have worked correctly, for example arithmetical accuracy, authorisation.

b) Reliability source data:

- Checking of the acceptability of the way in which the norms, standards and ex ante calculations are established (acceptability of policies and adequate segregation of duties);
- Evaluation of the measurement plan;
- Evaluation of the acceptability of the ways to obtain the data;
- Assessment whether measurement, calculation and estimation methods are authorised;
- Evaluation of the emission measurement points;
- Examination whether measurements are performed accurately;
- Examination whether measurements are performed at all registered emission points;

- Examination whether measurements, calculations and estimates are performed in accordance with the procedures;
- Test whether measurements are consecutively numbered and given a date and time;
- Review of plant records or log files to determine that control and monitoring facilities are properly maintained and, where appropriate, calibrated;
- Examination of internal control in relation to production records (input of flows and output of flows) and check with invoices where applicable;
- Examination whether measurements performed by the company are similar to those (re)performed by the regulatory authorities or external experts;
- Review of laboratory procedures for the analysis of emission samples;
- Examination whether the quality of the (internal or external) laboratory complies with the information obtained in the exploratory stage;
- Examination of the competence and commitment of employees;
- Establishing that for the most hazardous waste, it is counted or estimated and assessing the working of this procedure;
- For the recycling of waste products, check of the numerical sequence of consumption and delivery documents;
- Evaluation of the effectiveness and efficiency of the internal procedures for the categorisation of waste products;
- For waste stored outside the location (for example in anticipation of an export licence), request of confirmation from management at the location where the waste is being stored;
- Evaluation of procedures for the incineration of waste at the location and check by means of observation that the procedures are followed. Establish that a destruction protocol is made for incineration, including the nature of the waste, quantity and the date.

c) Reliability of data processing:

- Check of whether the accuracy, completeness and validity of measurement entries are monitored;
- Evaluation of the effectiveness and efficiency of the emission records;
- Evaluation of the measurement method applied (measurement at all important points, consistency of the measurement method, acceptability of formulas used), evaluate the company's motivation for the choice;
- Check of the compliance with the procedures for rounding in relation to concentrated emission data;
- Check whether a reconciliation is made between the measurements and the emission records;
- If waste is recognised at the moment of release, check whether reconciliation is made between the weight notes of waste and the waste records;

- If waste is recognised at the moment of origination, check of the internal control of production documents with regard to waste, the entries in the waste product records, the acknowledgement of receipt (storage of waste products) and the numerical sequence of production documents and receipt documents;
- Check whether a reconciliation is made between waste records and data obtained (weight notes, external confirmations, counts) and evaluate whether discrepancies have been explained;
- Check whether a reconciliation is made of the waste product records and the financial accounts (cost invoices for the transport of waste products, cost invoices for the external storage of waste products, cost invoices for the processing of waste products, purchase order forms to contractors for removal of the waste (with receipts) or consignment notes required by law to accompany waste sent for disposal);
- Examination whether data have not been processed and evaluation of the reason why.

d) Reliability of reporting:

- Check for a sample of measurements, that the audit trail can be followed from measurement to entry in the records that form the basis for the environmental report;
- Check for the most hazardous waste substances that the audit trail can be followed from the origin of the waste to its processing (internally or by an authorised processor) and check the period in which the waste is recognised (moment of origination/release, in connection with the matching to production);
- Evaluate internal analyses of emissions and waste (compare with targets, prior-year figures);
- Check whether explanations of deviations from targets and prior-year figures are acceptable.

Examples of procedures during the verification stage

Examples of analytical procedures include:

- Comparisons of emissions with prior-year and targets;
- Evaluation of the quantity of waste against previous periods and the estimated amounts;
- Evaluation of the ratio of raw materials consumption to the quantity of waste and emissions and compare the findings with the actual quantity of waste (by type);
- Evaluation of the quantity of end products and compare the findings with the quantity of waste by type and the emissions by type;
- Comparison of the number of complaints with the number of incidents in the accounts.

Examples of relational audit procedures include:

- Examination of the relation between the environmental report and the annual financial statements;
- Examination of the relation between the environmental accounts and the financial accounts;
- Examination of the consistency between the different environmental reports (e.g. in the Netherlands to authorities and the public);
 - information provided to public authorities under licences or taxes;
 - complaints register;
 - taxes paid;
 - if present, mass balance.
- Performance of an input-output analysis.

Examples of tests of details include:

- Reconciliation of the environmental records with the environmental report;
- Check on a test basis of the accuracy of the data entries;
- Check on a test basis of the calculations made;
- Consultation of internal and external lawyers;
- Check of measurements against entries in the emission records;
- Detailed checks of corrections to the emission records;
- Check whether measurements that were made at the end of the reporting period are timely entered in the records and the environmental report;
- Reconciliation on a test basis releases of waste products to waste collectors/processors with invoices;
- Check of releases of waste products against entries in the waste product records;
- Check of corrections to the waste product records in detail;
- Check whether incineration of waste products at the location resulted in write-downs in the waste product records;

- Check that the correct category of waste products has been written down;
- Check whether certain waste products have been held for a long time and if so why;
- Check that receipt, return and delivery documents around the balance sheet date are accounted for in the correct period;
- Check of the acceptability of the way in which norms, standards and ex ante calculations are established;
- Reconciliation of production records with the financial records of raw materials, water, fuel, energy consumption and other input data where applicable;
- Reconciliation of production records in relation to output of products with the financial records;
- Check whether the input of flows, such as consumption of water and energy around the beginning and end of the reporting period is accounted for in the correct period.

Examples of a full scope audit report and a limited scope audit report

Full scope audit report

Addressee: [name of the persons/groups of people to whom this audit report is addressed, preferably the supervisory board or the readers of the environmental report]

Scope of the audit

We have audited the [name of the environmental report] covering the period [mention the period]. The reporting policy used to draw up the environmental report and the inherent and specific limitations that impact the completeness and accuracy of the data are set out on page [mention page] of the environmental report.

The objectives were to obtain evidence whether the environmental report provides a true and fair view, consisting of evaluating the:

- Acceptability of the reporting policies used including the methods to obtain the source data;
- The reliability of the data and disclosures made in the environmental report;
- The sufficient and balanced presentation of the information.

Audit criteria

In assessing the subject matter we have used the following criteria:

[mention criteria e.g. the environmental section of the GRI-guidelines, UNEP 50 point checklist, the company's dialogue with its stakeholders/ In addition, we have consulted a stakeholder panel to obtain additional evidence whether all relevant issues have been addressed.]

Responsibilities

The environmental report is the responsibility of the entity's management. Our task is to express an independent opinion on the environmental report. A multidisciplinary team of accountants and environmental specialists has performed the audit. These auditors comply with the code of conduct of the International Federation of Accountants. This code of conduct includes amongst others requirements for the independence.

Audit work

We have conducted our audit in accordance with [mention audit standards/guidelines], applicable to the audit of environmental reports⁵⁶. We have performed the following kinds of procedures:

- Interviews and document reviews to assess whether the [name of the entity] has procedures in place to identify the key environmental issues arising from its operations [and products/services];
- Visited a representative cross-section of operational sites which comprise [mention name of entity] main business activities; At these sites we have reviewed the processes by which the environmental data are collected and collated and have tested their operating effectiveness;
- Determined on a test basis that data are factually correct and that a robust audit trail exists from source data to final reporting;
- Reviewed the internal control procedures at corporate level to verify the data submitted from the reporting units and tested their operating effectiveness;
- Held interviews and meetings with corporate environmental management and employees to assess the operation of the data collection procedures at head office;
- Comparison of the data in the environmental report with the data submitted by the sites;
- Held interviews with key staff and third parties to substantiate the accuracy and sources of statements used in the environmental report;
- Reviewed documents both internally and publicly available to ensure that the statements made are consistent with the underlying information;
- Assessed the acceptability of the reporting policy, including the obtaining of the source data;
- Assessed the view presented by the information in the environmental report.

We have selected a representative sample [describe how, statistical, random, risk based]
The sites visited represent[mention % of operations and % of the main indicators, if applicable with a distinction of more and less environmental sensitive operations]

We have been given full access to data and personnel.

We believe that the audit procedures performed provide a reasonable basis for our conclusions.

⁵⁶ As soon as generally acceptable audit standards exist for the audit of environmental reports, auditors may refer to these standards instead of describing the procedures performed in detail.

Conclusions

If applicable, matters affecting opinion

These may include:

- Material, but not fundamental disagreement in relation to information in the environmental report;
- Note to the limitations in the scope of the environmental report itself*;
- Uncertainties as a result of insufficient environmental information systems and internal controls;
- Uncertainties as a result of insufficient data from the sites;
- Uncertainties as a result of not being able to perform the necessary audit procedures (these include objectives limitations only, such as geographical circumstances or regulatory restrictions).

*Opinion***

Opinions in relation to the different sub-objectives such as:

- The reporting policies used, including the methods to obtain the source data, are acceptable.
- The sites visited employ a systematic approach to data collection and collation.
- The reported data has been properly collated at head office from the data provided by the [name of entity] operations.
- The data contain no material misstatements.
- The environmental information is sufficiently presented in a balanced way in the environmental report and substantiated by proper evidence. Inherent and specific limitations as to the reliability of the data have been properly described in the notes of the environmental report.

Overall, in our opinion, the environmental report provides a true and fair view of the company's environmental policy, management and performance (in accordance with [mention applicable criteria]).

Emphasis of matter

Without qualifying our opinion we draw your attention to:

Examples include:

- The performance data, tables and notes and our opinion should be read in conjunction with the reporting policy section on page [mention page]. This explains that HSE data is subject to more inherent limitations than financial data due to the methods used for measuring, calculating or estimating such data.
- Note to the system for data recording and collation at operational level, whether it was not sufficiently developed during the year to enable management to be confident of the data on certain key impacts. E.g. "the reliability of the aggregated Group HSE data is also affected because some operating entities collected and reported data in accordance with local regulations which deviated from Group reporting requirements. In some cases there

were omissions in the data collected and therefore had to be estimated or left out. Where there is a potentially material impact on the reliability of the aggregated data reported, this is explained in the notes to the performance data and tables. The notes are important to a proper understanding of the degrees of reliability of the reported data”.

* The information in the environmental report is always selective. However, all relevant information should be included. If there is an omission of fundamental information, the auditor qualifies his/her opinion. If information is material but not fundamental the auditor includes an emphasis of matter to make users aware of this fact.

** This is an example of an unqualified opinion. The possibility exists that a qualified audit opinion, on the grounds of uncertainty or disagreement will be given or that even an adverse opinion or a disclaimer of opinion must be given.

Limited scope audit report

Addressee: [name of the persons/groups to whom this audit report is addressed, preferably the supervisory board or the readers of the environmental report]

Scope of the audit

In accordance with the terms of our engagement, we have performed a limited scope audit of the [name of the environmental report] covering the period [mention the period]. The scope of the audit was limited to:

- [mention if applicable restriction to topics, and pages and mention which topics have not been audited]
- [mention if applicable restriction to sites, and mention which (part of the) sites have not been audited]
- [mention if applicable the following procedures (e.g. only the fact that the environmental report is in compliance with the data provided by the sites, not the reliability of the data at the sites itself) and mention what has not been done.

The reporting policy used to draw up the environmental report and the inherent and specific limitations that impact the completeness and accuracy of the data are set out on page [mention page] of the environmental report.

The objectives were to obtain evidence whether:

- [mention audit objectives, if applicable what was not included e.g. completeness]

Audit criteria

In assessing the subject matter we have used the following criteria:

[mention criteria e.g. the environmental section of the GRI-guidelines, UNEP 50 point checklist, the company’s dialogue with its stakeholders/ If applicable, mention the consultation of a stakeholderpanel].

Responsibilities

The environmental report is the responsibility of the entity's management. Our task is to express an independent opinion on the subject matters in relation to the audit objectives referred to above. This engagement is not a full scope audit. Accordingly we do not provide an opinion on the true and fair view of the environmental report as a whole. A multidisciplinary team of accountants and environmental specialists has performed the audit. These auditors comply with the code of conduct of the International Federation of Accountants. This code of conduct includes amongst other requirements for the independence.

Audit work

We conducted our audit in accordance with [mention audit standards/guidelines], applicable to the audit of environmental reports⁵⁷. In relation to the subject matter and the audit objectives mentioned above we therefore performed the following kinds of procedures: [mention procedures and their purpose].

We have been given full access to data and personnel.

We believe that the audit procedures performed provide a reasonable basis for our conclusions.

Conclusions

Matters affecting opinion

These may include:

- Material, but not fundamental disagreement in relation to information in the environmental report subject to audit;
- As a result of the limited scope of the audit we are unable to express an opinion whether the specific information audited is presented fairly.
- Uncertainties as a result of insufficient environmental information systems and internal controls;
- Uncertainties as a result of insufficient data from the sites in relation to topics which are subject to audit;
- Uncertainties as a result of not being able to perform the necessary audit procedures (these include objectives limitations only, such as geographical circumstances or regulatory restrictions).

⁵⁷ As soon as generally acceptable audit standards exist for the audit of environmental reports, auditors may refer to these standards instead of describing the procedures performed in detail.

Opinion

For each audit objective, a separate audit opinion should be provided. Such opinions will be limited to accuracy and completeness in the specific context of the environmental issue(s) and or sites subjected to audit. The auditor should give special consideration as to whether, in each case, the information is presented fairly, taken into consideration the effect of non-reporting of related information and the impression gained from a reading of the environmental report as a whole. Due to limitations in the scope of the audit an opinion on whether the information is balanced or is presented fairly (unbiased) cannot be given.

Emphasis of matter

Without qualifying our opinion we draw your attention to:

Examples include:

- The performance data, tables and notes, and our opinion, should be read in conjunction with the reporting policy section. This explains that HSE data is subject to more inherent limitations than financial data due to the methods used for measuring, calculating or estimating such data;
- Note to the system for data recording and collation at operational level, whether it was not sufficiently developed during the year to enable management to be confident of the data on certain key impacts. E.g. “the reliability of the aggregated Group HSE data is also affected because some operating entities collected and reported data in accordance with local regulations which deviated from Group reporting requirements. In some cases there were omissions in the data collected and therefore had to be estimated or left out. Where there is a potentially material impact on the reliability of the aggregated data reported, this is explained in the notes to the Performance Data Tables. The notes are important to a proper understanding of the degrees of reliability of the reported data”.

Literature

- Abdolmohammadi, M. and A. Wright (1987), *An examination of the effects of experience and task complexity on audit judgments*, the Accounting Review, vol. 57, no. 1, pp. 1-13
- Alchian, A.A. and H. Demsetz (1972), *Production, information costs, and economic organization*, American economic Review, Vol. December, 10 p.
- American Accounting Association (AAA) (1973), *Statement of Basic Auditing Concepts*, Studies in Accounting Research no.6, American Accounting Association, Sarasota
- American Institute of Certified Public Accountants (AICPA) (1983), *Statements on Auditing standards (SAS) 47, Audit Risk and Materiality in Conducting an Audit*, section 312
- Akkresh, A.D, J.K. Loebbecke and W.R. Scott (1988), *Audit approaches and techniques*, in: *Research Opportunities in Auditing: The second decade*, edited by A.R. Abdel-khalik and I. Solomon, American Accounting Association, Sarasota
- Arens, A. and J.K. Loebbecke (1997), *Auditing, an integrated approach*, 7th edition, Prentice Hall, New Jersey
- Ashton, R.H., D.N. Kleinmuntz, J.B. Sullivan, L.A. Tomassini (1988), *Audit decision making*, in: *Research Opportunities in Auditing: The second decade*, edited by A.R. Abdel-khalik and I. Solomon, American Accounting Association, Sarasota
- Ashton, A.H. and S.L. Kramer (1980), *Students as Surrogates in Behavioural Accounting Research: Some evidence*, Journal of Accounting Research, Spring, pp. 1-15
- Ashton, R.H. and P.R. Brown (1980), *Descriptive modelling of auditors' internal control judgments: replication and extension*, Journal of Accounting Research, vol.18, no.1, spring 1980, pp. 269-277
- Ashton, R.H.(1974a), *An experimental study of internal control judgments*, Journal of Accounting Research, spring 1974, pp. 143-157
- Ashton, R.H. (1974b), *Cue utilization and expert judgments: a comparison of independent auditors with other judges*, Journal of Applied Psychology, vol. 59, no.4, pp. 437-444
- Association of Chartered Certified Accountants (ACCA) (1996) *Business concepts of sustainability and the implications for the accountancy* (1996), ACCA, London
- Association of Chartered Certified Accountants (ACCA) (1993) *Accounting for the environment*, ACCA, London
- Ball, A., D.I. Owen and R.H. Gray (2000), *External transparency or internal capture? The role of third party statements in adding value to corporate environmental reports*, Business Strategy and the Environment, Vol. 9, No. 1, pp. 1-23

- Bebbington, J. (2000), *Sustainable development: a review of the international development, business and accounting literature*, Aberdeen papers in accountancy, finance and management, University of Aberdeen
- Bebbington, J., R. Gray, I. Thomson, D. Walters (1994), *Accountants' Attitudes and Environmentally-sensitive Accounting*, Accounting and Business Research, Vol. 24, No. 94, pp. 109-120
- Bedard, J.C. (1989), *An archival investigation of audit program planning*, Auditing: A journal of Practice and theory, vol. 8, 1989, pp. 57-71
- Benston G.J. (1982), *Accounting and corporate accountability*, Accounting, Organisations and Society, Vol. 7, No.2, pp. 87-105
- Berendsen, J.G. (1990), *Maatschappij, Onderneming en Accountant*, VU uitgeverij, Amsterdam, proefschrift
- Biggs, S.F., M. Selfridge, G. R. Krupka, B.L. Lewis, D.E. O Leary, (1993), *A computational model of auditor knowledge and reasoning process in the going-concern judgement*, Auditing, Vol. 12, supplement
- Biggs, S.F. and T.J. Mock (1983), *An investigation of auditor decision processes in the evaluation of internal controls and audit scope decisions*, Journal of Accounting Research, vol.21, no.21, spring 1983, pp.234-255
- Biggs, S.F., Th.J. Mock and P.R. Watkins (1988), *Auditor's use of analytical review in audit program design*, the Accounting Review, January 1988, pp. 141-161
- Bindenga (1973), *Het vrije beroep van accountant*, Samson, Alphen aan den Rijn, proefschrift
- Bins-Hoefnagels, I.M.J., G.C. Molenkamp, K.P.G. Wilschut (1986a), *De milieu-auditor en de accountant*, de Accountant, nr. 10, juni 1986, pp. 446-452
- Bins-Hoefnagels, I.M.J., K.P.G. Wilschut, G.C. Molenkamp, (1986b) *Milieu-auditing*, Milieu, nr. 4, 1986, pp. 101-106
- Blokdijk, J.H., F. Drieënhuizen, W.H. Pasha, R. Rozenkrans and K.P.G. Wilschut (1992), *Milieu en accountant*, Kluwer/Limperg-Instituut reeks
- Blokdijk, J.H. en F. Drieënhuizen (1992), *The environment and the audit profession, A Dutch research study*, European Accounting review, vol. 1, pp. 437-443
- Blokdijk, J.H.(1988), *Het axiomatisch voorbehoud en de verantwoordelijkheid voor fraude*, 'Maandblad voor Accountancy en Bedrijfshuishoudkunde', April, pages 118-129
- Blokdijk, J.H. (1986), *Accountantscontrole en milieu-auditing*, de Accountant, nr. 2, Oktober, pp. 58-60
- Bouma J.J. en A.E.M. Kamp-Roelands (2000), *Stakeholders' expectations of an environmental information system: an exploratory research*, European Accounting Review, Vol. 9, No.1, pp. 131-145
- Bremmers, H.J.(1995), *Milieuschade en financieel verslag*, Ridderkerk, proefschrift
- Brown, C.E. and I. Solomon, *Configural information processing in auditing: the role of domain-specific knowledge*, The Accounting Review, 1991, pp. 100-119

- Brown, N. and C. Deegan (1998), *The public disclosure of environmental performance information – a dual test of media setting theory and legitimacy theory*, Accounting and Business Research, Vol. 29, pp. 21-41, Winter Issue
- Brownell, P. (1993), *Research Methods in Management Accounting*, Monograph no.2, Accounting Research Methodology: Coopers & Lybrand and Accounting Association of Australia and New Zealand
- Buisman, J.H and R.L. van Marion (1989), *Milieu en accountant*, De Accountant, april, pp. 366-372
- Burrell, G. and G. Morgan (1979), *Sociological paradigms and organisational analysis: elements of the sociology of corporate life*, Heinemann Educational, London
- Cadbury, A. (1992), *Report of the Committee on the financial aspects of corporate governance*, Gee, London
- Canadian Institute of Chartered Accountants (CICA) (1994), *Reporting on environmental performance*, CICA, Toronto
- Canadian Institute of Chartered Accountants (CICA) (1992), *Environmental auditing and the role of the accounting profession*, CICA, Toronto
- CEFIC (1993), European Chemical Industry Council, *Guidelines on environmental reporting for the European chemical industry*, Brussels
- Coalition for Environmentally Responsible Economies (CERES) (1989), *The Valdez Principles* (later renamed the CERES principles), CERES, Boston
- Chi, M.T.H.R., R. Glaser and E. Rees (1982), *Expertise in problem-solving*, in: *Advances in the Psychology of Human Intelligence Vol.1*, Edited: R.J. Sternberg, Hillsdale, NJ, Erlbaum Associates, pp. 7-75
- Christ, M.Y. (1993), *Evidence on the nature of audit planning problem representations: an examination of auditor free recalls*, the accounting Review, vol. 68, no. 2, pp. 304-322
- Chung, J. (1995), *Auditors' Confidence and the Audit Expectation Gap*, Australian Accountant, June, pages 26-30
- Colbert, Janet L. (1988), *Inherent risk: an investigation of auditors' judgments*, Accounting, organisations and society, Vol. 13, no.2, pp. 111-121
- Collison D. and R. Gray (1997), *Auditor's Responses to Emerging Issues: A UK Perspective on The Statutory Financial Auditor and the Environment*, International Journal of Auditing, Vol. 1 No. 2, pp. 135-149
- Committee of Sponsoring Organisations of the Treadway Committee(COSO) (1994), *Internal Control-Integrated Framework*, two volume edition, American Institute of Certified Public Accountants, Jersey City
- Dassen, R.J.M. (1995), *Audit quality: An empirical study of the attributes and determinants of audit quality perceptions*, University of Maastricht, thesis
- Deloitte & Touche/E. v.d. Sande (1996), *Back to Basics-a Conceptual Framework for Environmental Reporting*, Deloitte & Touche Nederland

- Deloitte Touche Tohmatsu International/International Institute for Sustainable Development and Sustainability (1993), *Coming Clean: Corporate Environmental Reporting*, London
- Douma S.W., (1987), *Op weg naar een economische organisatietheorie: agency-theorie*, MAB, Vol. november, pp. 420-432
- Drieënhuizen, F. (1992), *Milieuverslaggeving: learning by doing*, Dossier nr. 10, Account
- Drieënhuizen, F. (1994), *ECO-management and ECO-audit in the Netherlands*, de Accountant, no. 2, oktober 1994, pp. 97-100
- Dijk, van M.(1993), *Onderzoekmethoden en onderzoeksdilemma's bij management accounting onderzoek*, MAB, Vol. 67, nr. 1-2., pp. 16
- Dubin, R. (1978), *Theory development*, New York, Free Press
- Easterby-Smith, M., R. Thorpe and A. Lowe (1993), *Management Research: An Introduction*, London, Sage
- Eerste kamer der Staten-Generaal (1997), *Uitbreiding van de Wet Milieubeheer*, vergaderjaar 1996-1997, 24572, nr. 204, SDU, 's-Gravenhage.
- Einhorn, H.J. and R.M. Hogarth (1981), *Behavioural decision theory: processes of judgment and choice*, Journal of Accounting Research, Vol. 19, no. 1, pp. 1-31
- Elkington, J. (1999), *Cannibals with forks, the triple bottom-line of the 21st century business*, Capstone, Oxford
- Elliott R.K. and P.D. Jacobson (1998a), *Audit independence concepts*, The CPA Journal, December, pp. 30-37
- Elliott R.K. and P.D. Jacobson (1998b), *SEC Independence concepts, In search of solutions*, The CPA Journal, April, pp.14-20
- Elliott, R.K. (1997), *Assurance service opportunities: implications for academia*, Accounting Horizons, Vol. December 1997, pp. 61-74
- Emanuels J.A.(1995), *Overwegingen van accountants bij beslissingen in conflictsituaties; economische en ethische aspecten*, Thesis, Amsterdam, proefschrift
- Ericsson K. A. and H. A. Simon (1980), *Thinking aloud protocols as data*, Psychological review, May, pp. 215-251
- Ernst & Young, KPMG, PricewaterhouseCoopers and the House of Mandag Morgan (2000), *The Copenhagen Charter*, Denmark
- European Accreditation for Certification (EAC) (1999) *Guideline for the Certification of Environmental Auditors*
- European Commission (EU) (2001) *Verordening (EEG) Nr. 761/2001 van de Raad van 19 maart 2001 inzake de vrijwillige deelneming van organisaties aan een communautair milieubeheer- en auditsysteem*, Official Journal L 114, 24.4.2001
- European Commission (EU) (1993) *Verordening (EEG) Nr. 1836/93 van de Raad van 29 juni 1993 inzake de vrijwillige deelneming van bedrijven uit de industriële sector aan een communautair milieubeheer- en auditsysteem*, Publikatieblad van de Europese gemeenschappen nr L168, 10.7.1993/Council regulation (EEC) No 1836/93 of 29 June

- 1993 allowing voluntary participation by companies in the industrial sector in a Community eco-management and audit scheme, Official Journal L 168, 10.7.1993
- European Commission (EU, 1990), *Right to know*, Directive 90/313/EC, Brussels
 - Fédération des Experts Comptables Européens (FEE) (2002), *Providing Assurance on Sustainability Reports*, Discussion Paper, FEE, Brussels
 - Fédération des Experts Comptables Européens (FEE) (1999a), *Providing Assurance on Environmental Reports*, Discussion Paper, FEE, Brussels
 - Fédération des Experts Comptables Européens (FEE) (1999b), *Towards a generally accepted framework for environmental reporting*, Discussion Paper, FEE, Brussels
 - Fédération des Experts Comptables Européens (FEE)/Kamp-Roelands, A.E.M. (1996), *FEE-Research Paper on Expert Statements on Environmental Reports-1996*, Brussels, Federation des Experts Comptables Europeen
 - Fédération des Experts Comptables Européens (FEE) (1995), *Environmental Accounting, Reporting and Auditing: Survey of current activities and developments within the accountancy profession*, FEE, Brussels
 - Fédération des Experts Comptables Européens (FEE) (1993), *Environmental accounting and auditing: survey of current activities and developments*, FEE, Brussels
 - Felix, W.L., and W.R. Kinney jr.(1982), *Research in the auditor's opinion formulation process: state of the art*, the Accounting Review, Vol. LVII, No. 2, pp. 245-271
 - Financial Accounting Standards Board (FASB) (1980), *Statement of Financial Accounting Concepts No.2, Qualitative Characteristics of Accounting Information*, Stamford, Connecticut
 - Flint D.(1988), *Philosophy and Principles of Auditing; an introduction*, Macmillan Education, London
 - Frederick, D. M. (1991), *Auditors' representation and retrieval of internal control knowledge*, The Accounting Review, Vol. 66, No. 2, pp. 240-258
 - Glesne, C. and A. Peshkin (1992), *Becoming qualitative researchers: an introduction*, White Plains, New York
 - Global Reporting Initiative (GRI) (2000), *Sustainability Reporting Guidelines on Economic, Environmental and Social Performance*, GRI, Boston
 - Global Environmental Management Initiative/Investor Responsibility Research Center (GEMI/IRRC) (1996), *Environmental Reporting and third party statements*, Washington DC
 - Gorman F.B. and G. Ansong (1998), *Perceptions of independence-Do they change over time*, International Journal of Auditing, Vol. 2, pp. 185-196
 - Gray R. (2000), *Current Developments and Trends in Social and Environmental Auditing, Reporting and Attestation*, International Journal of Auditing, Vol. 4, pp. 247-268
 - Gray, R. (1998), *Imagination, a bowl of petunias and social accounting*, Critical perspectives on Accounting, Vol. 9, pp. 205-216

- Gray R.H., C. Dey, D. Owen, R. Evans and S. Zadek (1997), *Struggling with the praxis of social accounting, Stakeholders, accountability, audits and procedures*, Accounting, Auditing & Accountability Journal, vol. 10, No.3, pp. 325-364
- Gray R.H, D.L. Owen and C. Adams (1996), *Accounting and accountability: Changes and challenges in corporate social and environmental reporting*, Prentice Hall, London
- Gray, R.H., R. Kouhy and S. Lavers (1995), *Corporate social and environmental reporting, A review of the literature and a longitudinal study of UK disclosure*, Accounting, Auditing and Accountability Journal, Vol.2, No.2, pp. 47-77
- Gray, R., Walters D., Bebbington J. and I. Thomson (1995), *The greening of enterprise: an exploration of the (non) role of environmental accounting and environmental accountants in organizational change*, Critical Perspectives on Accounting, Vol. 6, pp. 211-239
- Gray, R. (1994), *Environmental accounting and auditing in Europe*, European Accounting Review, Vol. 3, No.3, pp. 581-590
- Gray R. H., Bebbington, K.J. and Walters, D. (1993), *Accounting for the environment: The greening of Accountancy Part II*, Paul Chapman Publishing, London
- Gray, R., (1992), *Accounting and environmentalism: an exploration of the challenge of gently accounting for accountability, transparency and sustainability*, Accounting, Organisations and Society, Vol. 17, No.5, pp. 399-425
- Gray (1991) R. and D. Collison, *The environmental audit: Greengauge or whitewash*, Managerial Auditing Journal, Vol. 6, No.5, pp. 17-25
- Gray, R.H., D.L. Owen and K.T. Maunders (1988), *Corporate social reporting: emerging trends in accountability and the social contract*, Accounting, Auditing and Accountability Journal, Vol. 1, No.1, pp. 6-20
- Gray, R., H., D.L. Owen and K.T. Maunders (1987), *Corporate Social Reporting: Accounting and Accountability*, Prentice/Hall International, London
- Gray R., D. Owen and K. Maunders (1986), *Corporate Social Reporting: The way forward*, Accountancy, December, pp. 108-109
- Gul, F.A., (1984), *The joint and moderating role of personality and cognitive style on decision making*, the Accounting Review, Vol. 59, No. 2, pp. 264-277
- Gwilliam, D.R. (1987), *A survey of auditing research*, Institute of Chartered Accountants in England and Wales, Prentice Hall International, London
- Hamilton, R.E. and W.F. Wright (1977), *The evaluation of internal controls over payroll*, Working paper, Stanford University
- Hibbitt, C. and A.E.M. Kamp-Roelands (2001), *Prudently protecting profits, the mild greening of global corporate management*, Royal NIVRA, Amsterdam
- Hillary, R. (1998), *Environmental Auditing: Concepts, Methods and Developments*, International Journal of Auditing, Vol. 2, pp. 71-85
- Hines, R.D. (1988), *Financial accounting: In communicating reality we construct reality*, Accounting, Organizations and Society, Vol. 13, No. 3, pp. 251-261

- Hirst, D.E.(1994), *Auditor's sensitivity to source reliability*, Journal of Accounting Research, vol.32, No.1, spring 1994,pp 113-126
- Hogarth, R. M.(1991), *A perspective on cognitive research in accounting*, the Accounting Review, Vol. 66, No.2, pp. 277-290
- Holstein, J.A. and J.F. Gubrium (1995), *The active interview*, Sage publications, Beverly Hills, California
- Houghton, K.A. (1987),*True and fair view: An empirical study of connotative meaning*, Accounting, Organisations and Society, Vol. 12, No.2, 1987, pages 143-152
- Humphrey, C. and D. Owen (2000), *Debating the 'power' of audit*, International Journal of Auditing, Vol.4, pp. 29-50
- Humphrey, C. P. Moizer, S. Turley (1992), *The audit expectations gap in the United Kingdom*, The Institute of Chartered Accountants in England and Wales, London
- Huizing, A. and H.C. Dekker (1992) *The environmental issue on the Dutch political market*, Accounting, Organisations and Society, 17, pp. 427-448
- Hylas, R.E. and R.H. Ashton (1982), *Audit detection of financial statement errors*, The Accounting Review, Vol. 57, No. 4, October 1982
- International Accounting Standards Committee (IASC) (1996), *International Accounting Standards*, IASC, London
- Instituut voor Arbeidsvraagstukken (IVA)(1992), *Bedrijfsinterne milieuzorgsystemen: stand van zaken in bedrijven 1990/1991*, P.T. Calkoen en K. ten Have, IVA, Tilburg
- Institute of Chartered Accountants in England and Wales (ICAEW) (1992) *Business, accountancy and the environment, a policy and research agenda*, ICAEW, London,
- Institute of Chartered Accountants of Scotland (ICAS,) 1994, *The flaming torch*, ICAS, Edinburgh
- International Chamber of Commerce (ICC) (1991), *Effective environmental auditing*, April, Paris
- International Institute for Sustainable Development (IISD) (1992), *Sourcebook on sustainable development*, IISD, Winnipeg
- International Federation of Accountants (IFAC)(2000), *Assurance Engagements*, International Standard 100 Assurance Engagements, IFAC, New York
- International Federation of Accountants (IFAC)(1999), *Assurance Engagements*, Exposure Draft, IFAC, New York
- International Federation of Accountants (IFAC)(1998), *Code of Conduct*, IFAC, New York
- International Federation of Accountants (IFAC)(1998), *International Standards on Auditing*, IFAC, New York
- International Federation of Accountants (IFAC)(1997), *Reporting on the credibility of information*, Exposure Draft, IFAC, New York
- International Federation of Accountants (IFAC)(1995), *The accountancy profession and the environment*, Discussion Paper, IFAC, New York

- International Federation of accountants/ International Auditing Practice Committee (IFAC/IAPC), 1998, *Risk assessments and internal control*, IFAC Handbook 1998, IFAC, New York
- International Organization for Standardization (1996a), *ISO 14001 Environmental management System-Specification with guidance for use*, Geneva
- International Organization for Standardization (1996b), *ISO 14010, Guidelines for environmental auditing-General Principles*, Geneva
- International Organization for Standardization (1996c), *ISO 14011, Guidelines for environmental auditing-Audit procedures-Auditing of environmental management systems*, Geneva
- International Organization for Standardization (1996d), *ISO 14012, Guidelines for environmental auditing- Qualification criteria for environmental auditors*, Geneva
- Institut der Wirtschaftsprüfer (IDW) (1999), *IDW Auditing Standard: Generally Accepted Standards for Audits of Environmental Reports (IDW AuS 820)*, IDW, Düsseldorf
- Jensen M.C. and W.H. Meckling (1976), *Theory of the firm: Behaviour, agency cost and ownership structure*, Journal of Financial Economics, 3, pp. 305-360
- Johnson, L. Todd (1993), *Research on environmental reporting*, Accounting Horizons, Vol.7, No.3, September 1993, pp 118-123
- Johnson, P. E., K. Jamal and R. G. Berryman (1989), *Audit judgment research, Accounting, organisation and society*, Vol. 14, No.1/2, pp. 83-99
- Kamp-Roelands, A.E.M. (2001), *Maatschappelijke verslaggeving en verificatie: Geboden zekerheid? Voorzichtigheid geboden!*, MAB, september 2001, Vol. 75, nr. 9, pp. 372-383
- Kamp-Roelands, A.E.M. (2000), *Maatschappelijke verantwoording volgens de Richtlijnen van het Global Reporting Initiative*, Comagazine, vol. December 2000, 36-38
- Kamp-Roelands, A.E.M. en C.Hibbitt (2000), *Maatschappelijke verslaggeving: de richtlijnen van Global Reporting Initiative*, De Accountant, vol. December 2000, p. 184-187
- Kamp-Roelands, A.E.M. (1999), *Audits of environmental reports: Are we witnessing the emergence of another expectation gap?*, Focus, nr. 1, Koninklijk NIVRA
- Kamp-Roelands, A.E.M. en J.J. Bouma (1998a), *De kwaliteit van milieu-informatie, in hoeverre is ISO 14001 toereikend?*, Amsterdam, Limperg Instituut
- Kamp-Roelands, A.E.M. en J. Dijkema (1998b), *Milieuverslaggeving*, in: Het jaar 1997 verslagen, Amsterdam, Kluwer/Koninklijk NIVRA
- Kamp-Roelands, A.E.M. en L.J. Prikken (1998c), *De ACC Award: Prijs voor het beste Nederlandstalige milieuverslag*, IMZ Intergrale Milieuzorg, afl. 34, III.4.4.1-101-120
- Kamp-Roelands, A.E.M. (1997a), *Voorkomen is beter dan genezen, de verwachtingskloof bij verklaringen in milieuverslagen*, vol. 104, nr. 1, p. 38-41

- Kamp-Roelands, A.E.M. (1997b), *Verklaringen van onafhankelijke externe deskundigen nader bekeken*, de Accountant, vol. 103, nr.9, p. 585-588
- Kamp-Roelands, A.E.M.(1996), *The audit of environmental reports, in: Environmental accounting and sustainable development*, The Final Report, p. 84-106, Amsterdam, Limperg Institute
- Kamp-Roelands, A.E.M. (1995), *Accounting als domein voor de audit van milieuverantwoordingen?*, de Accountant, vol. 101, no. 9, p. 586-590
- Kollenburg, J.C.E. van (1991), *De deugd in het midden*, inaugurale rede, BDO Camps Obers Groep, Tilburg
- Kolk, A. (2000), *Verificatie van milieuverlagen*, MAB, vol. September, pp. 363-374
- Koninklijk Nederlands Instituut van Registeraccountants (NIVRA, 2000), *Richtlijnen voor de Accountantscontrole*, Koninklijk NIVRA, Amsterdam
- Koninklijk Nederlands Instituut van Registeraccountants (NIVRA, 2000), *Checklist Milieuverlaggeving*, Koninklijk NIVRA, Amsterdam
- Koninklijk Nederlands Instituut van Registeraccountants (NIVRA, 1999), *Beleidsnotitie Milieu, Achtergrond en uitgangspunten*, Koninklijk NIVRA, Amsterdam
- Koninklijk Nederlands Instituut van Registeraccountants (NIVRA, 1998), *Richtlijnen voor de Accountantscontrole*, Koninklijk NIVRA, Amsterdam
- KPMG/Wetenschappelijk Instituut voor MilieuManagement (WIMM (1999a), *KPMG International survey of environmental reporting 1999*, de Meern
- KPMG (1999b), *Milieuverlagen in Nederland over 1997*, De Meern, KPMG
- KPMG (1998a), *The KPMG Survey of Environmental Reporting 1997*, London, KPMG
- KPMG (1998b), *Environmental Reporting in the Netherlands in 1996*, The Hague, KPMG
- KPMG (1997a), *International Survey of Environmental Reporting 1996*, research performed by Ulrika Wennberg, The International Institute for Industrial Environmental Economics at Lund university, Sweden
- KPMG (1997b), *Milieuverlaggeving over 1995 in Nederland*, Den Haag
- KPMG (1997c), *Environmental reporting, KPMG Denmark*, Copenhagen
- KPMG(1996) *Milieuverlaggeving over 1994 in Nederland*, Den Haag
- KPMG (1995a), *UK Environmental Reporting, Survey 1994*, London
- KPMG (1995b), *Milieuverlaggeving over 1993 in Nederland*, Den Haag
- KPMG (1993a), *KPMG International Survey of Environmental Reporting*, KPMG, London
- KPMG Milieu (1993b), *Milieuverlagen: stand van zaken in Nederland*, KPMG, Den Haag
- Lehman, G. (1999), *Disclosing new worlds: a role for social and environmental accounting and auditing*, Accounting, Organizations and Society, Vol. 24, pp. 217-214

- Libby, R., J.T. Artman and J.J. Willingham (1985), Process susceptibility, control risk, and audit planning, the Accounting Review, Vol. LX, No.2, April, pp. 212-230
- Libby, R. and J. Luft (1993), *Determinants of judgment performance in accounting settings: ability, knowledge, motivation, and environment*, Accounting Organisations and Society, Vol. 18, pp. 425-450
- Limperg Instituut (1998), *Opvattingen over het functioneren en rapporteren van accountants*, Limperg Instituut, Amsterdam
- Limperg Intituut (1987), *Opvattingen over accountants*, Limperg Instituut, Amsterdam
- Limperg, Th. (1965), *Bedrijfseconomie: verzameld werk van Prof. dr. Th. Limperg jr./Leer van de accountantscontrole en van de winstbepaling*, Kluwer, Deventer
- Limperg, Th. (1926), *De beteekenis van de accountantsverklaring in verband met de verantwoordelijkheid van den accountant*, Muuses, Purmerend
- Lindblom, C.K. (1994), *The implications of organizational legitimacy for corporate social performance and disclosure*, paper presented at the Critical perspectives on Accounting Conference, New York Legitimacy threats of organizations
- Macdonald, N. and J.R. Glasz (1995), The Needs and Expectations of the Users of Financial Reports, 'De Accountant', nr. 4, December, pages 255-260
- Maletta, M. J. and T. Kida (1993), *The effect of risk factors on auditors' configural information processing*, the Accounting Review, July 1993
- Maunders K.T. and R.L. Burritt (1991) *Accounting and ecological crisis*, Accounting, Auditing and Accountability journal, Vol. 4, No.3, p. 9-26
- Mautz, R.K. and H.A. Sharaf (1961), *The philosophy of auditing*, American Accounting Association, Monograph nr. 6
- Mock, T.J. and J.L. Turner (1981), *Internal accounting control evaluation and auditor judgement*, American Institute of Certified Public Accountants (AICPA), New York
- Mock, T.J and A. Wright (1995), *Audit evidential planning: Further archival evidence on whether program plans are risk-adjusted*, Post USC ARF draft
- Mock, T.J and A. Wright (1993), *An exploratory study of auditor evidential planning*, Auditing, A Journal of Practice and Theory, Fall, pp. 39-61
- Molenkamp, G.C., A.H.J. van Leenen, Wilschut, K.P.G. (1985), *Grondslagen van 'environmental auditing'*, De Ingenieur, nr. 7/8, juli/augustus 1985, pp. 18-21
- Newell, A. and H.A. Simon (1972), *Human problem solving*, Prentice-Hall, Englewood Cliffs
- Nooij, A.T.J. (1990), *Sociale methodiek, normatieve en beschrijvende methodiek in grondvormen*, Stenfert Kroese
- Olders (1997), *Kwaliteitsperceptie en accountantsdiensten*, MAB, Vol. 71, Nr. 3, pp. 126-138
- Organisation for Economic Co-operation and Development (OECD) (1999), *Principles of Corporate Governance*, OECD, Paris

- Owen, D.L., T.A. Swift, C. Humphrey and M. Bowerman (2000), *The new social audits: accountability, managerial capture or the agenda of social champions?*, The European Accounting Review, Vol. 9, No. 1, pp. 81-98
- Payne, J., M. Braunstein and J. Carroll (1978), *Exploring predecisional behavior: An alternative approach*, 1978, Organization Behavior and Human Performance, pp. 17-44
- Patten, D.M. (1992), *Intra-industry environmental disclosures in response to the Alaskan oil spill: A note on legitimacy theory*, Accounting, Organisations and Society, Vol. 17, pp. 471-475
- Peters, J.M. (1989), *A knowledge-based model of inherent audit risk assessment*, University of Pittsburgh, U.M.I. Dissertation Services, Michigan
- Peters, James M., Barry L. Lewis and Vasant Dhar (1989), *Assessing inherent risk during audit planning: the development of a knowledge based model*, Accounting, Organisations and Society, Vol. 14, No.4, pp. 359-378
- Piet, J.L.P. (1996), *Rekenschap en Milieuzorg*, Ontwikkeling van de milieu-accountancy, Documil, Diemen, proefschrift
- Piet, J.L.P. (1993), *Ontwikkeling van het milieuverslag*, WIMM-Report 93/01, Wetenschappelijk Instituut voor Milieu-Management, Universiteit van Amsterdam, Amsterdam
- Piet, J.L.P. (1992), *Functie van de milieu-accountant*, WIMM-Report, 92/02, Wetenschappelijk Instituut voor Milieu-Management, Universiteit van Amsterdam, Amsterdam
- Porter, B. (1993), *An Empirical Study of the Audit Expectation-Performance Gap*, Accounting and Business Research, Vol. 24, No. 93, 1993, pages 49-68
- Power M. (2000), *The audit society-Second thoughts*, International Journal of Auditing, Vol. 4, No.1, pp. 111-119
- Power, M. (1997), *Expertise and the construction of relevance: Accountants and Environmental Audit*, Accounting, Organizations and Society, Vol. 22, No.2, pp. 123-146
- Power, M. (1997), *The audit society, rituals of verification*, Oxford University Press, Oxford
- Power, M. (1996), *Making things auditable*, Accounting, Organizations and Society, Vol. 21, pp. 289-315
- Power M. (1994), *The audit explosion*, Demos, London
- Quadackers, L., T. Mock, and S. Maijoor (1994), *Audit risk and audit programs: Archival evidence from four Dutch audit firms*, USC Working paper 94-6
- Roussey R.S. (2000), *A case for Global Corporate Governance Rules: An Auditor's Perspective*, International Journal of Auditing, Vol. 4, pp. 203-211
- Stichting Coördinatie Certificatie Milieuzorgsystemen (SCCM) (1997), *Certificatie Milieuzorgsystemen volgens ISO 14001*, Den Haag
- Tricker, R. (2000), Editor' Policy Note, *Corporate Governance*, Vol. 8, no. 1 January, pp. 1-6

- Trotman, K.T.(1996), *Research methods for judgment and decision making studies in auditing*, Coopers & Lybrand/Accounting Association of Australia and New Zealand, accounting research methodology monograph, Melbourne
- Trotman, K.T. and R. Wood (1991), *A meta-analysis of studies on internal control judgements*, Journal of accounting research, Vol. 29, no.1, pp. 180-192
- Turnbull, S. (1997), *Corporate governance: its Scope, Concerns and Theories*, Corporate Governance, Vol. 5, no. 4 October, pp. 180-205
- Tversky A. and D. Kahneman (1974), *Judgement under uncertainty: Heuristics and biases*, Science, 185, 1124-1131
- Tweede Kamer der Staten-Generaal (1996), *Uitbreiding van de Wet Milieubeheer (Milieuverslaggeving)*, Tweede Kamer, vergaderjaar 1995-1996, 24.572, Sdu uitgevers, Den Haag, English translation available: Dutch bill extending the Environmental Management Act to provide for environmental reporting, Ministry of Housing, Spatial Planning and the Environment, The Hague
- United Nations Department of Public Information (UN) (1992), *Agenda 21*, Geneva
- United Nations World Commission on Environment and Development (UN) (1987), *Our Common Future (The Brundtland Report)*, Oxford University Press
- United Nations Conference on Trade and Development – Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting (UN-ISAR/Gray and Bebbington) (1995), *Incentives and Disincentives for the adoption of sustainable development by transnational corporations*, by R.H. Gray and K.J. Bebbington, TD/B/ITNC/AC.1/3, United Nations, Geneva
- United Nations (1999), *The Global Compact*, www.unglobalcompact.org
- United Nations (UN-ISAR) (1994), *Environmental disclosures: international survey of corporate reporting practices*, E/C.10/AC.3/1994/4, Geneva
- United Nations Environment Programme Industry and environment (UNEP) (1997), *The 1997 Benchmark Survey, The third international progress report on company environmental reporting*, Paris
- United Nations Environment Programme Industry and environment (UNEP)(1994), *Company environmental reporting*, Technical Report no. 24, 94/III/D3, Paris
- Verstegen, P.H.T. (1995), *Milieu-informatie-audit, Milieuzorg en Informatievoorziening*, april 1995 D2000-1 (losbladig)
- Wallage, P. (1993), *Auditing theory*, in; *Handboek accountancy*, Dl I, Vol. 1993, p. A1100, Samson, Alphen a/d Rijn
- Waller, W.S. (1993), *Auditors assessments of inherent and control risk in field settings*, The Accounting Review, Vol.68, No.4, October 1993
- Weick, K.E. (1989), *Theory construction as disciplined imagination*, Academy of management Review, 1989, Vol. 14, No. 4, 516-531
- Wester, F. en I. Maso (1991), *Moeilijkheden en mogelijkheden: het omgaan met problemen in de praktijk van de kwalitatieve analyse*, SISWO, Amsterdam

- Whetten, D.A. (1989), *What constitutes a theoretical contribution*, Academy of Management review, 1989, Vol. 14, No. 4, 490-495
- Whyte, W.F. (1991) editor, *Participatory action research*, Sage publications, Newbury Park
- Willis, A. (1993), *User needs for independent audit of environmental issues*, presented by Alan Willis at OECD (1993), Roundtable on environmental accounting and auditing, Paris, May 18, 1993
- Wilschut, K.P.G.(1998), *Corporate governance en de maatschappelijke functie van de accountant*, De Accountant, nr. 1, september 1998, pp. 8-11
- Wilschut, K.P.G. (1997), *Auditing by objectives*, De Accountant, nr. 4, december 1997, pp. 239-243
- Wilschut, K.p.g. (1994a), *Enige theoretische beschouwingen rondom auditing*, De EDP-auditor, januari 1994, pp. 17-20
- Wilschut, K.P.G. (1994b), *Towards a general theory of auditing*, 'De Accountant', nr. 2, October 1994, pages 103-106
- Wilschut, K.P.G. (1993), *Op weg naar een algemene auditing-theorie*, De Accountant, nr. 9, mei 1993, pp. 582-585
- Wilschut, K.P.G. (1991), *Het wetenschappelijk karakter van de leer van de accountantscontrole*, De Accountant, nr.2, oktober 1991
- Wilschut, K.P.G. (1990a), *Het denkmodel achter de risico-analyse in de accountantscontrole*, De Accountant, nr.2, oktober 1990, pp. 86-91
- Wilschut, K.P.G. (1990b), *Twintig stellingnamen rondom de bemoeienis van accountants met de milieuproblematiek*, De Accountant, nr. 1 september 1990, pp. 15-17
- Wilschut K.P.G., (1989a), *Waar zouden we zijn zonder de accountant?*, in: *Entering the nineties*, TRN Cahiers over zakelijke dienstverlening onder redactie van: J.R. van Helvoort, R.N.J. Kamerling, J.P.J. Krom, K.P.G. Wilschut
- Wilschut, K.P.G. (1989b), *De relatie AA-RA: van rivaliteit naar complementariteit, de Accountant-Adviseur*, nr. 4, april 1989, pp. 9-11
- Wilschut, K.P.G. (1988 a), *Enige theoretische overwegingen rondom de herziening van het verklaringstelsel*, De Accountant, nr. 4, december 1988, pp. 179-182
- Wilschut, K.P.G. (1988 b), *Vertrouwensleer en verwachtingskloof*, De Accountant, nr. 6, februari 1988, pp. 263-266
- Wilschut, K.P.G.(1987a), *De verwachtingskloof aangaande de dienstverlening door het accountantsberoep*, De Accountant, nr. 8, april 1987
- Wilschut, K.P.G (1987b) *Het primaire object van de accountantscontrole*, De Accountant, nr. 6, februari 1987, pp. 244-250
- Wilschut, K.P.G. (1986), *Accountantscontrole geen auditing?*, De Accountant, nr. 9, mei 1986, pp. 411-413
- Wilschut, K.P.G. (1985a), *Een raamwerk voor het instrumentarium van de accountantscontrole*, De Accountant, nr. 2, oktober 1985, pp. 60-65

- Wilschut, K.P.G. (1985b), *Over auditing in het algemeen en over accountantscontrole in het bijzonder*, 'De Accountant', nr. 9, May 1985, pp. 60-65
- Witherell (1999), *The OECD and corporate governance, a strong disclosure regime is indispensable for effective corporate governance*, Accountancy, Vol. June 1999, p.78
- Yin, R.K. (1984), *Case study research, Design and methods*, Sage publications, Beverly Hills, California
- Zadek, S., P. Pruzan and R. Evans (1997), *Building corporate accountability: Emerging practices in social and ethical accounting, auditing and reporting*, Earthscan, London
- Zadek, S. (1993), *The social audit of Traidcraft plc*, Social and Environmental Accounting, Vol. 13, No. 2, pp. 5-6
- Zadek, S. and R. Evans (1992), *Auditing the Market: A practical Approach to Social Accounting*, New Economics Foundation, London

De controle van milieuverslagen

Mensen in de samenleving zijn zich in toenemende mate bewust dat veranderingen op milieu- en sociaal-ethisch terrein nodig zijn voor de instandhouding van de samenleving. Bedrijven spelen een belangrijke rol in onze samenleving. Ondernemen en maatschappelijke verantwoordelijkheid zijn onlosmakelijk met elkaar verbonden. Het bedrijf is een open systeem waarbij sprake is van een permanente wederzijdse beïnvloeding met de omgeving. De leiding van het bedrijf dient daarom verantwoording af te leggen aan de samenleving over haar functioneren in die samenleving. Deze verantwoording wordt steeds breder. Van bedrijven wordt niet alleen meer verwacht dat zij prestaties behalen op het financieel economische terrein, maar ook dat zij resultaten behalen op het milieu en sociaal-ethisch terrein. Bedrijven krijgen te maken met meer verschillende stakeholdergroepen⁵⁸, die een toenemende interesse tonen in de gevolgen van de activiteiten van het bedrijf. Deze interesse kan zich uitstrekken over de gehele levenscyclus van het product of de dienst. Transparantie is in deze een belangrijk sleutelwoord geworden voor bedrijven.

Erkennen en beheersen van milieuproblematiek wordt gezien als een belangrijke maatschappelijke verantwoordelijkheid. Dit proefschrift beperkt zich tot de controle van milieuverslaggeving. Bedrijven gaan in toenemende mate via een milieuverslag verantwoording afleggen over hun milieubeheer en prestaties. Hiervoor zijn verschillende aanknopingspunten beschikbaar. In Nederland is er bijvoorbeeld vanaf het verslagjaar 1999 een wettelijke verplichting om een milieuverslag te publiceren voor de grotere potentieel vervuilende bedrijven (ongeveer 260 bedrijven). Een toenemend aantal bedrijven laat hun milieuverslag controleren. Het doel van dit proefschrift is het ontwikkelen van een raamwerk voor de controle van milieuverslaggeving.

Voor de ontwikkeling van een raamwerk voor de controle van milieuverslaggeving kan gebruik worden gemaakt van de theorie voor de controle van financiële verslaggeving en het daaruit voortvloeiend raamwerk. Dit kan echter niet zonder meer. Ieder domein heeft eigen kenmerken en er zijn dus aanpassingen nodig. Zowel Wilschut als Flint identificeren kenmerken die verschillende soorten controles met elkaar gemeen hebben om op deze wijze te komen tot een meer algemene controletheorie. Een dergelijke algemene controletheorie zou toepasbaar moeten zijn in verschillende domeinen, waarbij de controle eveneens door deskundigen vanuit verschillende domeinen uitgevoerd kan worden. Een dergelijke aanpak sluit aan bij het door IAPC recent beschreven raamwerk voor assurance-opdrachten. Het raamwerk is algemeen van aard en zou toepasbaar moeten zijn voor het geven van zekerheid omtrent een breed scala van controle-onderwerpen, echter nog steeds vanuit het perspectief

⁵⁸ Voorbeelden van stakeholders zijn werknemers, aandeelhouders, consumenten, omwonenden, milieu-organisaties en mensenrechtenorganisaties

van dienstverlening door accountants. Het is echter de vraag of de accountant steeds als lead auditor op kan treden bij een dergelijk breed scala van controle-onderwerpen. De mogelijkheid van samenwerking met andere deskundigen, waarbij beide verantwoordelijkheid dragen of de accountant wellicht zelfs slechts ‘waterdrager’ is voor andere deskundigen worden echter niet belicht. Juist voor de controle van milieuverslagen zijn dit mogelijkheden die in overweging moeten worden genomen bij het ontwikkelen van een raamwerk.

De theorie wordt beschreven in 4 niveaus. Niveau 1 beschrijft de filosofische grondslag en is gebaseerd op Mautz and Sharaf. Controleren is een concrete toepassing van logisch redeneren. Bij het ontwikkelen van een theorie wordt gebruik gemaakt van verschillende filosofieën, zoals de filosofie van wetenschap, van wiskunde, van logica en van ethiek. Niveau 2 beschrijft de postulaten en is gebaseerd op Limperg, Wallage, Flint en Mautz en Sharaf. Door verschillende filosofen zijn postulaten beschreven met betrekking tot controle. Met elkaar vergelijkend en beredenerend blijken uiteindelijk 7 postulaten relevant te zijn voor een algemene controletheorie. In tabel S.1 worden deze nader beschreven. Niveau 3 beschrijft de concepten (een nadere uitwerking van de postulaten) op basis van het conceptuele raamwerk zoals dat door Wilschut wordt weergegeven. Er wordt ingegaan op het domein van waaruit de controle plaatsvindt, de auditor (onafhankelijkheid, onpartijdigheid en competentie), het onderwerp van de controle, de controledoelstellingen, de toetsingsmiddelen en de daaraan gerelateerde indicatoren, het waarnemen (het verzamelen van controlebewijs en de methoden en technieken daarvoor), de relatie tussen de verschillende stadia van het controleproces en de communicatie (binnen het audit team en extern naar cliënten en gebruikers). Niveau 4 beschrijft het raamwerk, dat als basis dient voor nadere controlerichtlijnen in een bepaald domein. Door middel van empirisch onderzoek moet het raamwerk nader ingevuld worden voor de controle van milieuverslagen.

De controles van milieuverslagen worden niet alleen uitgevoerd door accountants, maar ook door milieuconsultants en certificatie-instellingen. De opleiding en ervaring van deze andere deskundigen is divers. Uit oriënterend onderzoek bij verklaringen in milieuverslagen in de periode tot en met eind 1995 (in totaal 45 verklaringen), beschreven in hoofdstuk 4, blijkt dat er een grote diversiteit is in de uitgevoerde controles. De expertise van de auditors die de controle van milieuverslagen uitvoeren blijkt te verschillen. Het land lijkt hier invloed op te hebben. In Groot-Brittannië worden de meeste milieuverslagen gecontroleerd door milieuconsultants, terwijl in Nederland in die periode alle milieuverslagen waren gecontroleerd door accountantskantoren. Het onderwerp van controle varieert. Naast (onderdelen) van het milieuverslag betreft het soms ook een evaluatie van het milieubeleid, het milieumanagement en de milieuprestaties van het bedrijf. De doelstellingen van de controle blijken slecht te worden weergegeven. Uit het oordeel in de afgegeven verklaring blijkt het echter in de meeste gevallen te gaan om de mate waarin de gegevens op een juiste (en/of volledige) wijze zijn weergegeven. Ook blijken de toetsingscriteria slechts zelden te worden geformuleerd. In de gevallen waarin dit wel gebeurt, ontbreekt eenduidigheid in de gebruikte criteria.

Tabel S.1 Overzicht van een controletheorie (vertaling van tabel 3.2)

	Algemeen	Details
Basis filosofie	<ul style="list-style-type: none"> - Filosofie van logica - Filosofie van metafysica - Filosofie van kennis - Filosofie van wiskunde - Filosofie van ethiek 	Disciplines van wetenschap, psychologie, sociologie, communicatie, statistiek.
Postulaten	<p>Leer van het opgewekte vertrouwen (Limperg, 1926):</p> <ul style="list-style-type: none"> - Gebruikers hebben vertrouwen in het onafhankelijk en competent oordeel van de auditor. Rechtvaardig het vertrouwen van de gebruiker in de controlefunctie; - Vervul de rationele behoeften van gebruikers; en - Wek niet meer vertrouwen in de functie van auditor dan gerechtvaardigd is op grond van de uitgevoerde werkzaamheden en de expertise van de auditor. 	<ol style="list-style-type: none"> 1. Er bestaat een (althans zo ervaren) verantwoordelijkheid en een daaraan gerelateerde verantwoordingsplicht tussen tenminste twee partijen. 2. Er bestaat een kans op een (zo ervaren) belangenverstremming; 3. Het onderwerp waarover verantwoording wordt afgelegd is te belangrijk; te veraf of te complex om verantwoording af te leggen zonder controle; 4. Van de controle wordt een (mogelijk) voordeel verwacht; 5. De functie van auditor bestaat alleen omdat gebruikers van controle vertrouwen hebben in zijn/haar professioneel oordeel dat onbevooroordeeld en deskundig is; 6. Inzake het onderwerp van controle kan bewijs worden verzameld; 7. Voor de verantwoordingsplicht zijn criteria beschikbaar of kunnen hiervoor worden ontwikkeld; 8. Het oordeel kan op een duidelijke en eenduidige manier worden gecommuniceerd.
Elementen van controle en hieraan gerelateerde concepten	<p>Domein van waaruit de controle plaatsvindt</p> <p>Auditor</p> <p>Controle-opdracht</p> <p>Controleproces</p> <p>Verklaring</p>	<p>Definieert de reikwijdte en de beperkingen van het professionele oordeel</p> <p>Professioneel, competent, onafhankelijk, objectief en integer</p> <p>Identificeerbaar onderwerp van controle, overeengekomen controledoelstellingen, mate van zekerheid en toetsingsmiddelen (beschikbaar of specifiek voor de opdracht ontwikkeld)</p> <p>Uitgevoerd op een zodanige wijze dat alle werk nodig om het oordeel te staven is uitgevoerd</p> <p>Op een zodanige manier geformuleerd dat niet meer verwachten kunnen worden gewekt dan gerechtvaardigd op basis van de uitgevoerde werkzaamheden en de expertise van de auditor.</p>

Geen van de verklaringen verstrekt informatie over de mate van zekerheid die wordt gegeven. Ook milieuconsultants gebruiken de term 'review', maar relateren dit niet aan een beperkte mate van zekerheid. Uit de verklaringen blijkt dat het controlebewijs veelal wordt verzameld door middel van het doornemen van documentatie, bezoek aan de verschillende vestigingen en interviews. In enkele gevallen blijkt dat slechts een verklaring wordt gegeven over het feit dat het milieuverslag op betrouwbare wijze is samengesteld uit de gegevens in de 'milieu'-administratie. Er wordt hiermee geen zekerheid gegeven over de betrouwbaarheid van de brongegevens. Anderzijds zijn er ook verschillende verklaringen waarbij men zich kan afvragen of de beschreven controlewerkzaamheden wel een deugdelijke grondslag vormen voor de afgegeven verklaring. De verschillende beperkingen inherent aan het verzamelen van milieugegevens en de bedrijfsspecifieke beperkingen vanwege de nog beperkte administratief organisatorische en interne controlemaatregelen komen niet tot uitdrukking in de verklaringen. Wel blijkt dat milieuconsultants aanbevelingen geven voor verbeteringen van het milieuzorgsysteem in het algemeen.

De diversiteit kan worden verklaard door het ontbreken van een uniforme grondslag voor het afleggen van verantwoording en richtlijnen voor de methodiek van deze controles. De aangetroffen diversiteit in opdrachten, werkzaamheden en verklaringen is een probleem als dit leidt tot een verwachtingskloof onder de gebruikers. Dit kan uiteindelijk leiden tot het verlies in de behoefte aan controle door auditors. Gebruikers zullen dan naar andere manieren gaan zoeken waarop zij zekerheid kunnen verkrijgen over de betrouwbaarheid van informatie. De verwachtingskloof is reeds in 1926 beschreven door Limperg. In zijn vertrouwenstheorie gaat hij in op het vertrouwen dat gebruikers hebben in het deskundig en onafhankelijk oordeel van de accountant. Het is van belang dat de controles zodanig uitgevoerd worden dat ze voorzien in de behoefte van gebruikers en dat de kwaliteit van deze controles toereikend is. Bovendien mag niet meer vertrouwen worden gewekt dan gerechtvaardigd is op grond van de verrichte werkzaamheden en de expertise van de accountant. Het schaden van het vertrouwen van gebruikers van verslagen leidt tot het verlies in het vertrouwen van de accountant en daardoor tot het verlies van de behoefte aan controle. Ook in deze tijd is de theorie nog geldig en beperkt zich niet tot accountants, maar lijkt van toepassing op auditors in het algemeen. De verwachtingskloof kan worden opgedeeld in een communicatiekloof en een prestatiekloof. De communicatiekloof ontstaat door verschillen in verwachtingen omtrent het onderwerp van controle, de controledoelstellingen, de mate van zekerheid, de toetsingscriteria, de controleprocedures en de interpretatie van het oordeel. De prestatiekloof ontstaat doordat de auditor als grondslag voor zijn oordeel minder controlewerkzaamheden heeft verricht, zowel qua diepgang als omvang, dan redelijkerwijze mocht worden verwacht. De auditor schiet dus tekort.

Door middel van empirisch onderzoek is nagegaan of het probleem van de verwachtingskloof zich inderdaad voordoet. Gegeven de grote variëteit aan gebruikers en problemen met de identificering van deze gebruikers bij de betreffende bedrijven heeft het onderzoek zich beperkt tot de bedrijven die de opdracht hebben verstrekt. Uitgangspunt hierbij is dat als er

verschillen zijn in verwachtingen tussen bedrijven en auditors, deze verschillen er zeker moeten zijn tussen gebruikers en auditors. De bedrijven zijn immers op de hoogte van de reikwijdte van de opdracht.

Aan zowel auditors als bedrijven die de controle-opdracht hebben verstrekt is gevraagd de verwachtingen weer te geven ten aanzien van de controle-opdracht en ten aanzien van de bij het betreffende bedrijf afgegeven verklaring. Hiervoor kregen zij verschillende onderwerpen voorgelegd waarover zekerheid kan worden gegeven en onderwerpen die onderdeel kunnen vormen van de opdracht.

Het onderzoek is uitgevoerd in 1996, een moment waarop nog niet veel milieuverslagen gecontroleerd waren. De uitkomsten van het onderzoek wijzen op het bestaan van een verwachtingskloof.

De onderzochte bedrijven hadden een ander beeld van de reikwijdte van de opdracht dan de auditors die het milieuverslag hebben gecontroleerd. De verschillen betroffen voornamelijk het ontdekken van milieufraude, de naleving van wet- en regelgeving en de mate waarin advies wordt gegeven over het milieuzorgsysteem. Ook over de interpretatie van de afgegeven verklaringen was geen overeenstemming tussen het betreffende bedrijf en de auditor die de verklaring heeft afgegeven. Over de verschillende vooraf gegeven onderwerpen waarover zekerheid gegeven kan worden, interpreteerden bedrijven zowel meer zekerheid (36%) als minder zekerheid (25%) dan de auditors naar hun mening hebben gegeven.

Bedrijven interpreteerden voornamelijk meer zekerheid inzake de meest essentiële onderwerpen te weten het beeld dat het milieuverslag geeft, materiële fouten en de stoffen die de emissies veroorzaken. Bedrijven geloofden dat de verklaring dezelfde mate van zekerheid gaf (64%) of zelfs meer zekerheid gaf (15%) over de verschillende onderwerpen dan 'geeft een getrouw beeld'. Ook de auditors zelf gaven aan dat zij dezelfde mate van zekerheid hadden gegeven als 'getrouw beeld (54%) of zelfs meer (11%)'. Bij de vraag hoe 'geeft een getrouw beeld' geïnterpreteerd moet worden blijkt dat verschillende auditors (33%) en bedrijven (41%) geloven dat hiermee volledige zekerheid wordt gegeven. Om een beter inzicht te verkrijgen in de verwachtingskloof is echter aanvullend onderzoek nodig naar verwachtingen van diverse stakeholders. Toch geven deze onderzoeksresultaten reeds aan dat er belangrijke interpretatieverschillen zijn tussen bedrijven en auditors. Het is van belang om maatregelen te nemen om deze verwachtingskloof reeds in een vroeg stadium te reduceren. Hiervoor worden vanuit de literatuur verschillende suggesties aangereikt. Om de communicatiekloof te verkleinen is het van belang te communiceren met stakeholders. Dit kan gedurende de hele controle, maar lijkt in ieder geval van belang voor aanvang van de controle, te weten bij de opdrachtformulering en de keuze van de te hanteren criteria, en na afloop van de controle, te weten bij de toelichting op de afgegeven verklaring. Het is derhalve aan te bevelen het milieuverslag te presenteren in een bijeenkomst waar de verschillende stakeholders vertegenwoordigd zijn.

Er is door middel van empirisch onderzoek inzicht verkregen in de planning van de controle. De planning van de controle is gericht op een zo effectief en efficiënt mogelijk gebruik van mensen en middelen tijdens de uitvoering van de controle. De planning kan worden uitgevoerd met behulp van verschillende methodieken. Men kan bijvoorbeeld gebruik maken

van een cijferbeoordeling, van de risico-analyse of van interviews. Uit oriënterende interviews met auditors van milieuverlagen in het veld bleek de planning op dat moment weinig gestructureerd te verlopen. Er werd weinig tijd besteed aan het vooraf ontwikkelen van een controle-aanpak. Impliciet vonden tijdens de uitvoering van de controle afwegingen plaats die leidde tot een bepaalde richting van de controle, met name tijdens de eerste fase van de controle. Op basis van de eerste evaluatie van resultaten van interviews of ontvangen cijfermateriaal worden bepaalde conclusies getrokken die implicaties hebben voor de verdere controle-aanpak. Ook bevindingen van voorgaande jaren waren van invloed op de richting van de controle. Om de overwegingen die tijdens de planning worden gemaakt te achterhalen is aan experts op het gebied van de controle van milieuverlaggeving in Nederland gevraagd hardop te denken op basis van een realistische casus. Op deze wijze kunnen de afwegingen, die experts impliciet maken in het begin van het controleproces meer expliciet gemaakt worden. Bij de planning wordt onder meer een oordeel gevormd over de opzet van de interne controle.

Uit het onderzoek blijkt dat van de informatie die werd verzameld tijdens de planning de informatie over het informatiesysteem, de algemene en in het systeem ingebouwde interne controlemaatregelen en de analyse tussen de werkelijke en normatieve prestatieresultaten het meest belangrijk waren. Er werd weinig informatie verzameld over inherent risico's. Informatie die men uit zijn/haar geheugen opnoemde betrof meestal informatie over milieu-issues die van belang kunnen zijn voor de betrouwbaarheid van de gegevens. Meer ervaren auditors putten meer kennis uit hun geheugen dan de onervaren auditors. Geen van de auditors maakte een schatting van de kansen op het voorkomen van onjuistheden. Tijdens het evalueren van de informatie worden verschillende veronderstellingen gemaakt. Hierbij worden ook vuistregels gebruikt. Vaak worden deze gebaseerd op de ervaringen van de auditor met andere cliënten. Omdat de situaties niet onderling vergelijkbaar hoeven te zijn ontstaat hierbij het risico dat controleprocedures worden verminderd op basis van onjuiste veronderstellingen. Over de relevantie van een ISO 14001 certificaat voor de controle van het milieuverlag bestond geen eenduidige mening. Sommigen waren van mening dat het weinig of niets toevoegde omdat daarbij niet wordt gekeken in hoeverre het milieu-informatiesysteem toereikend is voor betrouwbare milieu-informatie. Anderen waren daarentegen van mening dat het juiste een grote invloed had, omdat het betekent dat er een systematische benadering van milieu-aangelegenheden is, inclusief het meten en registreren van milieuprestatiegegevens.

De kennis die gebruikt werd betrof kennis van stoffen, van metingen en van het informatieproces. De auditors is ook gevraagd welke kennis naar hun mening belangrijk was. Hieruit bleek dat zij kennis van auditing en kennis van de administratieve organisatie en interne controle als meest belangrijk ervaren.

De risico's die zijn geïdentificeerd tijdens het hardop denken betroffen met name risico's met betrekking tot het verkrijgen van de primaire milieuprestatiegegevens. Er zijn vrijwel geen inherente risico's genoemd. Ook risico's met betrekking tot de houding van het management zijn weinig genoemd. Sommige van de genoemde risico's zijn eerder milieurisico's dan informatierisico's. De identificering van de risico's lijkt samen te hangen met de ervaring van de auditor, omdat ervaren auditors de meeste risico's hebben genoemd. De geïdentificeerde

risico's vormen een belangrijke input voor de verdere uitwerking van het raamwerk. De soort controlewerkzaamheden, die de auditors noemden uit te gaan voeren varieerde enorm. Dit bevestigt opnieuw dat het ontwikkelen van een raamwerk van belang is. De genoemde werkzaamheden vulden elkaar aan en vormen daarom eveneens een belangrijke input voor het raamwerk. De meeste procedures waren gericht op de betrouwbaarheid van het verkrijgen van de primaire milieuprestatiegegevens door middel van metingen en berekeningen. Minder nadruk lag op de betrouwbare verwerking van de gegevens.

Belangrijk is dat de auditor zodanig rapporteert dat geen onrealistische verwachtingen ontstaan. Voor de inhoud van de verklaring kunnen een aantal onderwerpen genoemd worden waarover informatie moet worden gegeven. Voor de inhoud van de verklaring gelden eisen, die aan de kwaliteit van informatie gesteld kunnen worden. Het betreffen de eisen van relevantie, begrijpelijkheid, volledigheid, vergelijkbaarheid, consistentie, getrouwe weergave, voorzichtigheid, objectiviteit en tijdigheid. Bovendien speelt de geloofwaardigheid van de auditor een belangrijke rol. Informatie in de verklaring over de onafhankelijkheid van de auditor, de competentie en de professionaliteit (bv. Referentie naar gedragscode en controlerichtlijnen) kan de geloofwaardigheid van de auditor en daarmee de waarde van zijn/haar verklaring verhogen. In bestaande verklaringen in Europa gepubliceerd in het verslagjaar 1997 is nagegaan in hoeverre deze verklaringen voldoen aan de kwaliteitseisen en is nagegaan in hoeverre 'best practice' kon worden geïdentificeerd ten behoeve van de verdere ontwikkeling van het raamwerk. In totaal zijn 68 verklaringen geanalyseerd. Uit de onderzoeksresultaten blijkt dat er verschillende titels voor de verklaring worden gebruikt. Populair is zowel de verwijzing naar de auditor (report by ..) als de verwijzing naar de soort opdracht (bv. verification statement). Voor de naam van de opdracht worden veel verschillende namen gebruikt. Het meest populair is 'verification' en 'review'. Uit de opdrachtbeschrijvingen blijkt dat controles soms worden gecombineerd met evaluaties bijvoorbeeld van het milieuzorgsysteem, het rapporteringproces of zelfs van de milieuprestaties (31%). Behoudens het feit dat een dergelijke combinatie de onafhankelijkheid van de auditor in gevaar kan brengen, bemoeilijkt het ook de vergelijkbaarheid van de verklaringen. Afzonderlijke rapportering over controle en evaluaties moet daarom in overweging worden genomen. Uit het onderzoek blijkt dat slechts 20% van de verklaringen melding maakt van de geadresseerde van de verklaring. Over wie dit moet zijn bestaat geen eenduidigheid. Zowel de raad van bestuur, het bedrijf als de lezers worden genoemd. Als men de gedachtegang volgt dat de controle in principe de taak is van het toezichthoudend orgaan, zoals een raad van commissarissen waarin een brede vertegenwoordiging van stakeholders (inclusief aandeelhouders) zitting heeft, en dit toezichthoudend orgaan haar taak vervolgens uitbesteed aan auditors dan zou de verklaring primair aan dit toezichthoudend orgaan gericht moeten zijn. Toch komt een dergelijke adressering niet voor. De beschrijving van de reikwijdte van de controle bestaat uit een beschrijving van het onderwerp van controle, de controledoelstellingen, de mate van zekerheid en de te gebruiken toetsingscriteria. De reikwijdte van het onderwerp van controle wordt altijd op een positieve manier beschreven, waarbij in 29% van de verklaringen wordt aangegeven waartoe de opdracht zich beperkt. De doelstelling van de controle wordt in

slechts 47% van de verklaringen genoemd. In slechts 12% van de verklaringen wordt gerefereerd aan de mate van zekerheid. Dit gebeurt uitsluitend door accountants. Omdat de lezer in dit vroege stadium nog geen idee heeft wat een controle-opdracht normaliter in zou moeten houden is het belangrijk om het onderwerp van controle en de controledoelstellingen zowel positief (wat is gecontroleerd) als negatief (wat is niet gecontroleerd) te beschrijven. Toch komt dit echter slechts in 4% van de verklaringen voor. Voor de lezer is het moeilijk te ontdekken wat de beperking is in de reikwijdte van de opdracht temeer omdat beperkingen op verschillende plaatsen in de verklaring worden beschreven. In 24% van de verklaringen was geen referentie naar de naam van het milieuverslag en in 25% was er geen of slechts onduidelijke informatie over de verslagperiode. In slechts 6% van de verklaringen was een referentie opgenomen naar de gehanteerde verslaggevinggrondslagen.

Voor de lezer is niet altijd duidelijk wat de verantwoordelijkheden zijn van de auditors en het rapporterende bedrijf. In slechts 46% van de verklaringen wordt de verantwoordelijkheid van het bedrijf genoemd, terwijl die van de auditor in slechts 35% van de verklaringen wordt genoemd. De toetsingscriteria zijn belangrijk voor de juiste interpretatie van het oordeel. Toch wordt in slechts 38% van de verklaringen gerefereerd aan de gebruikte toetsingscriteria. De beschrijving van de werkzaamheden geeft inzicht in de deugdelijke grondslag voor het oordeel. De meeste verklaringen (93%) geven al dan niet op meer uitgebreide schaal uitleg over hun controlewerkzaamheden. Of dit een deugdelijke grondslag vormt voor het oordeel kan worden betwijfeld. Bij slechts 46% wordt hierbij iets gezegd over de werkzaamheden uitgevoerd bij de verschillende vestigingen, terwijl slechts 4% hiervan aangeeft dat daarvoor een representatief aantal is bezocht. Als geen zekerheid is verkregen over de betrouwbaarheid van de basisgegevens dan kan ook geen zekerheid worden gegeven over de betrouwbaarheid van het milieuverslag zelf (garbage in = garbage out).

In totaal worden in 25% van de verklaringen onzekerheden in de controle genoemd, waarvan 12% als gevolg van beperkingen in de betrouwbaarheid inherent aan het onderwerp van controle en 13% als gevolg van specifieke onzekerheden vaak als gevolg van een ontoereikende administratieve organisatie en interne controle. Het lijkt erop dat auditors ervoor kiezen hun oordeel weer te geven in een rapport van bevindingen om daarmee te voorkomen dat ze een verklaring met beperking of zelfs een oordeelonthouding af moeten geven. In 44% van de verklaringen worden bevindingen genoemd. Ook lijkt het erop dat beperkingen worden geformuleerd in de vorm van aanbevelingen. In 56% van de verklaringen worden aanbevelingen gegeven, waarvan in 34% van de verklaringen in combinatie met de rapportering van de bevindingen. In 7% van de verklaringen wordt het oordeel negatief geformuleerd. Het is echter de vraag of het voor de lezer duidelijk is dat men hiermee de mate van zekerheid die gegeven wordt wil beperken.

Omdat verschillende disciplines werkzaam zijn in dit veld is het voor de lezer belangrijk inzicht te verkrijgen in de discipline(s) van waaruit de controle is verricht. In slechts 49% van de verklaringen kan echter dit echter worden achterhaald. Slechts 75% van de verklaringen is gedateerd. Hiermee is het voor de lezer onduidelijk tot en met welke periode gebeurtenissen na balansdatum in ogenschouw zijn genomen.

De vergelijkbaarheid van de verklaringen wordt bemoeilijkt omdat de verklaringen qua structuur verschillen. Hoewel vrijwel alle verklaringen op een of andere manier informatie

geven over de reikwijdte van de verklaring, de controlewerkzaamheden en de conclusies ontbreekt in veel verklaringen informatie over de andere onderwerpen. Ook de wijze waarop de informatie wordt gegeven verschilt. Hoewel bedrijven van auditor wisselde (in vergelijking met het hierboven beschreven onderzoek naar verklaringen) bleek de inhoud van de verklaringen dezelfde te zijn. Dit kan betekenen dat het bedrijf een grote invloed heeft op de inhoud van de verklaring. In de verklaringen zelf blijkt een gebrek aan consistentie tussen de reikwijdte van de opdracht, de uitgevoerde controlewerkzaamheden en de conclusies. Dit wordt vooral veroorzaakt door de beperkingen in de reikwijdte van de controle die op verschillende plaatsen min of meer verborgen worden weergegeven. Voor de lezer is dit niet alleen onduidelijk, maar kan er tevens toe leiden dat hij/zij te hoge verwachtingen heeft van het oordeel.

Hoewel de conclusies in de verklaring in vergelijking met het hierboven eerder beschreven onderzoek voorzichtiger werden geformuleerd wordt toch nog in 12% van de verklaringen bewoordingen als 'getrouw beeld' of varianten hierop gebruikt. In 9% van de verklaringen worden zelfs waarde oordelen gegeven. De geloofwaardigheid van de auditor kan verder worden verhoogd. In slechts 35% van de onderzochte verklaringen wordt de onafhankelijkheid van de auditor expliciet genoemd, waarbij nergens wordt gerefereerd aan een gedragscode. In slechts 22% van de verklaringen blijkt dat de controle is uitgevoerd door een multidisciplinair team. En in slechts 31% van de verklaringen is een verwijzing opgenomen naar professionele controlestandaarden, waarmee rekening is gehouden. De analyse van de verklaringen heeft geleid tot belangrijkste aandachtspunten voor de formulering van de verklaring en concrete voorbeelden voor teksten voor de onderwerpen zoals die in de verklaring kunnen worden opgenomen.

Op basis van de onderzoeksresultaten is het eerder ontworpen raamwerk voor controle nader ingevuld voor de controle van milieoverslaggeving. Hiervoor is tevens gebruikt gemaakt van de kennis van milieudeskundigen. Concepten van de uit te voeren procedures zijn voorgelegd en besproken.

Voor het raamwerk worden de elementen van controle nader ingevuld.

a) Controledomein

Het controledomein van waaruit de controle dient plaats te vinden wordt bepaald door de behoefte aan controle. Het is van belang te weten of gebruikers van controle een oordeel wensen over de milieuprestaties of over de weergave van de milieuprestaties in het milieoverslag. Als dat eerste het geval is dient de controle plaats te vinden vanuit het domein milieukunde. Indien er behoefte is aan het tweede dan lijkt het domein gelegen in accounting. Gezien de beperkingen inherent aan controle kan de auditor echter nooit een oordeel geven in de vorm van "dit zijn de milieuprestaties van het bedrijf". De auditor zal altijd moeten steunen op de interne controle binnen het bedrijf en moeten nagaan of de conventies die zijn gebruikt om de werkelijke milieuprestaties weer te geven (accounting/verslaggevingbeleid) aanvaardbaar zijn. In de huidige praktijk lijkt de behoefte te liggen in een oordeel over de weergave van de milieuprestaties, waarbij van de auditor wel deskundigheid omtrent het controle-object zelf wordt verwacht. De gebruiker zal echter geen genoegen nemen met een

axiomatisch voorbehoud ontstaan als gevolg van gebrek aan kennis van milieu-effecten. Voor de verzameling van controlebewijs en de interpretatie ervan is specifieke milieukennis nodig. Het domein van waaruit de controle dient plaats te vinden lijkt te liggen op een overlap tussen twee domeinen te weten accounting en milieukunde. De accountant heeft controlekennis, kennis van administratieve organisatie en interne controle en van (financiële) verslaggeving. Deze kennis is ook toepasbaar op andere objecten dan alleen financiële informatie. De milieukundige heeft kennis van de onderwerpen waarover in het controle-object verslag van wordt gedaan: kennis van milieurisico's, van milieu-effecten in relatie tot processen en producten en kennis van enkele specifieke controletechnieken. Naarmate de controlekennis, kennis van verslaggeving en van administratieve organisatie en interne controle zich verder zal ontwikkelen binnen het milieukundig domein, kan het domein van de controle van milieuverlagen meer zich meer naar dit domein verplaatsen.

b) Auditor

Voor milieu zijn geen algemeen aanvaarde verslaggevingregels voor handen. Daarom speelt de professionele oordeelsvorming van de auditor een belangrijke rol. Dit vereist naast kennis van milieuverlaggeving, audit en interne controle ook kennis van milieu-aspecten van bedrijfsactiviteiten en kennis van meet- en berekeningstechnieken en van de daaraan verbonden inherente beperkingen inzake de betrouwbaarheid van de gegevens. Deze kennis is voorsnog niet verenigd in één persoon. Het werken vanuit multidisciplinaire teams heeft dan ook de voorkeur. De ethische vereisten zoals onafhankelijkheid, onpartijdigheid, integriteit en geheimhouding zijn op eenzelfde wijze van toepassing voor auditors van milieuverlaggeving. Het werken in multidisciplinair teamverband vereist extra aandacht voor de competentie en gedragsregels voor de deskundigen waarmee wordt samengewerkt, de wijze waarop de verdeling van de verantwoordelijkheden plaatsvindt, de kwaliteitsbeheersing van de controle en de effecten van de samenwerking op de verklaring. Om adequaat te kunnen functioneren in multidisciplinaire teams is aanvullende kennis op het gebied van milieu onontbeerlijk.

c) Controle-object

Het controle-object bestaat uit het milieuverlag als weergave van milieubeleid, milieubeheer en de prestaties daarvan. De informatie over de prestaties kan betrekking hebben op alleen de processen of op de gehele levenscyclus van het product. De auditor moet nagaan in hoeverre een opdracht niet misleidend is als niet het gehele milieuverlag onderwerp van controle is. De auditor beoordeelt de bewering zoals vastgelegd in het milieuverlag ten opzichte van de werkelijke situatie. Daarbij maakt hij/zij gebruik van accounting, waarbij afspraken zijn gemaakt hoe de werkelijke milieuprestaties worden vastgelegd. Daarom wordt het proces van milieu-informatieverzorging en de betreffende maatregelen van interne controle eveneens beoordeeld. Zowel het controle-object, de controledoelstellingen als de toetsingscriteria moeten bij voorkeur worden vastgesteld door of in overleg met de stakeholders.

d) Controledoelstellingen

De controledoelstellingen hangen nauw samen met het controle-object. In principe zou ook hier de controledoelstelling ‘geeft een getrouw beeld van de milieuprestaties’ moeten worden gegeven. Het milieuverslag kent echter een grote diversiteit aan lezers en er is nog geen algemeen aanvaard raamwerk wat een getrouw beeld zou moeten zijn. Daarom moet duidelijk worden aangegeven hoe dat getrouw beeld is vastgesteld, uit welke subdoelstellingen het bestaat (zoals volledigheid, juistheid) en aan welke toetsingscriteria het milieuverslag is getoetst. Ook moet worden aangegeven welke mate van zekerheid verwacht wordt ten aanzien van de controledoelstellingen. De mate van zekerheid die gegeven kan worden wordt beïnvloed door de aard van het controle-object, de status en gedetailleerdheid van de toetsingscriteria, de diepgang van de controlewerkzaamheden en de kwantiteit en kwaliteit van het controlebewijs. De auditors moeten, gegeven de inherente beperkingen aan de betrouwbaarheid van milieu-informatie, proberen een zo hoog mogelijke mate van zekerheid te verschaffen.

e) Toetsingscriteria en indicatoren

De toetsingscriteria zijn de operationalisering van de controledoelstellingen. Gegeven de (mogelijke) belangentegenstelling tussen bedrijven en stakeholders moeten de toetsingscriteria door de stakeholders worden vastgesteld. Op dit moment ontbreken nog algemeen aanvaarde toetsingscriteria en indicatoren. Wel zijn verschillende richtlijnen beschikbaar zoals die van Global Reporting Initiative, UNEP en FEE. In Nederland ontbreken inzake de Wet Milieubeheer voor het publieksverslag meer gedetailleerde verslaggevingrichtlijnen. Naast wet- en regelgeving kan ook gebruik worden gemaakt van het eigen verslaggevingbeleid van het bedrijf, van deskundigenpanels of van de resultaten van de dialoog die het bedrijf heeft met zijn stakeholders. Alvorens dergelijke toetsingscriteria te kunnen gebruiken moet wel eerst vastgesteld worden of het proces waarmee deze tot stand zijn gekomen aan bepaalde kwaliteitseisen voldoet. Ook over de wijze waarop de gegevens moeten worden verkregen ontbreekt eenduidigheid. Professionele oordeelsvorming neemt dan een grotere rol in. Ook wordt dan belangrijker aan te geven hoe dit oordeel tot stand is gekomen. Ten behoeve van de duidelijkheid richting gebruiker is het belangrijk dat de gebruikte toetsingscriteria worden beschreven in de verklaring.

f) Controleproces

Het controlebewijs kan worden verkregen door toepassing van verschillende methoden en technieken.

De auditor doorloopt verschillende stadia in het controleproces. Tijdens de verkenningsfase beoordeelt de auditor het milieuverslag en de risico's dat het verslag niet voldoet aan de daaraan gestelde eisen. De auditor gaat na welke specifieke toetsingscriteria aanwezig zijn en in hoeverre hiervan gebruik kan worden gemaakt. De auditor gaat na hoe de gegevens zijn verkregen voor het milieuverslag en welke interne controlemaatregelen getroffen zijn met betrekking tot de betrouwbaarheid van het informatieproces. In hoofdstuk 8 worden suggesties gedaan voor het soort bewijs dat moet worden verzameld, de daarvoor te gebruiken controleprocedures en de daartoe te raadplegen bronnen van informatie. Specifiek voor de

controle van milieu-informatie zijn de controletechnieken inzake de verkrijgen van controlebewijs over de betrouwbaarheid van de primaire registraties van emissies en afval. Na de verkenningsfase komt de inspectiefase. Tijdens deze fase wordt vastgesteld of het interne controleproces bestaat zoals het is beschreven in de verkenningfase en werkt conform de beschrijving. Het bestaan van een ISO 14001 certificaat voor het milieuzorgsysteem is geen garantie voor betrouwbare verslaggeving, omdat ISO 14001 te weinig specifieke procedures voorschrijft voor het milieu-informatieproces. In hoofdstuk 8 worden suggesties gedaan voor het uitvoeren van controleprocedures. De derde fase die de auditor doorloopt is de verificatiefase. Als eenmaal is vastgesteld dat de primaire milieugegevens via een betrouwbaar proces tot stand zijn gekomen en via een betrouwbaar proces zijn verwerkt in de milieu-administratie en het milieuverslag dan concentreert de auditor zich op de kwantitatieve gegevens zelf. Tijdens de verificatiefase gaat de auditor door middel van analytische controle, verbands- en detailcontroles na of de primaire registraties juist, tijdig en volledig zijn verwerkt in de milieu-administratie en het milieuverslag. Als uit de vorige fase blijkt dat er belangrijke onzekerheden zijn omdat voor de intern verkregen primaire registraties belangrijke interne controlemaatregelen ontbreken of de administratieve organisatie van het milieuzorgsysteem nog ontoereikend is heeft de analytische controle weinig zin. Er is immers onzekerheid over de betrouwbaarheid van het onderliggende proces, waardoor er onzekerheid ontstaat over de betrouwbaarheid van de gegevens zelf. Er is bij deze processen met een ‘negatieve goederenbeweging’, een onderscheid tussen processen waarbij een (redelijk) sterk verband bestaat tussen emissies en positieve goederenstroom en processen waarbij een dergelijk verband ontbreekt. Toch kan in de praktijk vaak slechts in beperkte mate gebruik worden gemaakt van een stoffenbalans. De omvang van de emissies is vaak te beperkt ten opzichte van de totale omvang van de doorstromingsvolumina en valt weg in de daarbij gehanteerde toleranties. Toch zijn de doorstromingsvolumina relevant en moet de auditor zekerheid verkrijgen omtrent de volledigheid ervan. De totale emissie wordt immers berekend door de concentratiemetingen te vermenigvuldigen met de doorstromingsvolumina. In de laatste fase, de evaluatiefase, beoordeelt de auditor of toereikend controlebewijs is verkregen en wat de conclusies zijn ten aanzien van de controledoelstellingen. Bovendien beoordeelt de auditor of de gegevens in het milieuverslag of een toereikende wijze worden gepresenteerd. Vanwege het ontbreken van algemeen aanvaarde grondslagen voor de presentatie van milieu-informatie speelt hierbij professionele oordeelsvorming een belangrijke rol. Deze beoordeling kan niet plaatsvinden zonder milieutechnische kennis.

g) Verklaring

De verklaring is een informatieproduct en moet dus net als het milieuverslag zelf aan bepaalde kwaliteitseisen voldoen. Voor de leesbaarheid en vergelijkbaarheid is het aan te bevelen in de verklaring te werken met steeds dezelfde afzonderlijke kopjes. Omdat milieuverslaggeving in ontwikkeling is en algemeen aanvaarde verslaggevingrichtlijnen ontbreken is het belangrijk dat de auditor uitgebreid verslag doet van de reikwijdte van de controle en de voor de controle gehanteerde toetsingscriteria. Eventuele beperkingen in de reikwijdte moeten niet verborgen worden door ze op te nemen bij de controlewerkzaamheden. Het aan het milieuverslag ten grondslag liggende informatieproces is nog in ontwikkeling en

derhalve zal de auditor veelal te maken krijgen met specifieke beperkingen in de betrouwbaarheid van de milieu-informatie. Hierover moet de auditor duidelijk rapporteren. De multidisciplinaire samenwerking heeft ook gevolgen voor de verklaring. Er zijn verschillende opties om verantwoordelijkheden weer te geven. Voor de lezer is het wellicht het meest duidelijk als de auditors een gezamenlijke verantwoordelijkheid nemen en beide tekenen.

In deze dissertatie is een raamwerk ontwikkeld voor de controle van milieuverslaggeving. Het biedt aanknopingspunten voor het verder ontwikkelen van richtlijnen. Het is daarbij belangrijk dat auditors de dialoog van organisaties met hun stakeholders blijven stimuleren. In een dergelijke dialoog moet ook de reikwijdte van de controle (controle-object, controledoelstellingen en de mate van zekerheid) worden vastgesteld evenals de te gebruiken toetsingscriteria. Alleen als toetsingscriteria vastgesteld zijn door stakeholders is de controle van milieuverslaggeving geloofwaardig. Voorkomen moet worden dat auditors criteria gaan vaststellen en daarmee het verantwoordingsproces tussen organisaties en de maatschappij gaan beïnvloeden. Als toetsingscriteria eenmaal zijn vastgesteld kunnen auditors wel kritiek leveren op hun bruikbaarheid. Gegeven de mogelijke belangtegenstelling tussen organisaties en stakeholders moet ook voorkomen worden dat organisaties zelf gaan vaststellen waaruit het milieuverslag en de controle daarvan moet bestaan. De controlefunctie is onderdeel van de werkzaamheden die het toezichthoudend orgaan van organisaties moet uitvoeren. Het toezichthoudend orgaan moet bij voorkeur bestaan uit afgevaardigden van stakeholders. Reeds in het verleden is besloten om de controle van verslaggeving wordt uitbesteed aan auditors die hiervoor over meer specifieke competentie beschikken. De auditor voert derhalve werkzaamheden uit die door het toezichthoudend orgaan aan hem/haar zijn gedelegeerd. Het toezichthoudend orgaan, dat de stakeholders van de organisatie vertegenwoordigt, kan derhalve gezien worden als opdrachtgever van de audit.

Publications

- Kamp-Roelands, A.E.M. (1995), *Accounting als domein voor de audit van milieuverantwoordingen?*, de Accountant, vol. 101, no. 9, p. 586-590
- Kamp-Roelands, A.E.M. (1996), *Verantwoording afleggen over duurzame ontwikkeling*, vol.102, nr. 2, p. 102-105
- FEE/ A.E.M. Kamp-Roelands (1996), *FEE-Research Paper on Expert Statements on Environmental Reports*, Fédération des Expert Compatibles Européens, Brussels
- Kamp-Roelands, A.E.M. (1996), *The audit of environmental reports*, in: Environmental accounting and sustainable development, The Final Report, p. 84-106, Amsterdam, Limperg Institute
- Kamp-Roelands, A.E.M. (1997), *Verklaringen van onafhankelijke externe deskundigen nader bekeken*, de Accountant, vol. 103, nr.9, p. 585-588
- Kamp-Roelands, A.E.M. (1997), *Voorkomen is beter dan genezen, de verwachtingskloof bij verklaringen in milieuverslagen*, vol. 104, nr. 1, p. 38-41
- Kamp-Roelands, A.E.M. en J. Dijkema (1998), *Milieuverslaggeving*, in: Het jaar 1997 verslagen, Amsterdam, Kluwer/Koninklijk NIVRA
- Kamp-Roelands, A.E.M. en L.J. Prikken (1998), *De ACC Award: Prijs voor het beste Nederlandstalige milieuverslag*, IMZ Intergrale Milieuzorg, afl. 34, III.4.4.1-101-120
- Kamp-Roelands, A.E.M. (1998), *Naar een raamwerk voor het rapporteren over milieu-informatie*, de Accountant, vol. 104, nr. 10, p. 656-659
- FEE/A.E.M. KampRoelands (co-author), Fédération des Expert Compatibles Européens (FEE) (1999), *Providing Assurance on Environmental Reports*, Discussion Paper, FEE, Brussels
- Kamp-Roelands, N. en J.J. Bouma (1999), *De kwaliteit van milieu-informatie, in hoeverre is ISO 14001 toereikend?*, Amsterdam, Limperg Instituut
- Kamp-Roelands, N. (1999), *Audits of environmental reports: Are we witnessing the emergence of another expectation gap?*, Focus, nr. 1, Koninklijk NIVRA
- Kamp-Roelands, A.E.M. (2000), *De kwaliteit van Nederlandse milieuverslaggeving; een evaluatie van de vijfde ACC Award*, De Accountant, vol. Februari 2000, p. 400-404
- Kamp-Roelands, A.E.M. (2000), *Maatschappelijke verslaggeving: een nieuwe vorm van dienstverlening door accountants*, De Accountant, vol. April 2000, p. 508-512
- Bouma J.J. and A.E.M. Kamp-Roelands (2000), *Stakeholders' expectations of an environmental information system: an exploratory research*, European Accounting Review, volume 9, number 1, p. 131-145
- Kamp-Roelands, A.E.M. en C.Hibbitt (2000), *Maatschappelijke verslaggeving: de richtlijnen van Global Reporting Initiative*, De Accountant, vol. December 2000, p. 184-187

- Kamp-Roelands, A.E.M. (2000), Comagazine, *Maatschappelijke verantwoording volgens de Richtlijnen van het Global Reporting Initiative*, vol. December 2000, 36-38
- Kamp-Roelands, A.E.M. en mr. A. de Graaf (2001), *Milieuverslaggeving*, AA-Leidraad, Kluwer
- Kamp-Roelands, A.E.M. (2001), *Checklist Milieuverslaggeving*, Koninklijk NIVRA, Amsterdam
- Hibbitt C. and N. Kamp-Roelands (2001), *Prudently protecting profits?-The (mild greening of global corporate management)*, Research Report, Koninklijk NIVRA, Amsterdam
- Kamp-Roelands, A.E.M. (2001), *Maatschappelijke verslaggeving en verificatie: Geboden zekerheid? Voorzichtigheid geboden!*, MAB, september 2001, Vol. 75, nr. 9, pp. 372-383
- Kamp-Roelands, A.E.M. (2002), *Maatschappelijke verslaggeving en verificatie*, Risk Magazine, januari 2002
- Hibbitt, C. and N. Kamp-Roelands (2002), Focus “*Greening of the globals*”, Koninklijk NIVRA, Amsterdam
- FEE/N. Kamp-Roelands (co-author)(2002), *FEE Discussion paper on providing assurance on sustainability reports*, Fédération des Expert Comptables Européens, Brussels
- Hibbitt, C. and N. Kamp-Roelands (2002), *Europe's (Mild) Greening of Corporate Environmental Management*, International Journal of Corporate Sustainability, Corporate environmental strategy, Elsevier science, Volume 9, number 2, pp. 172-183
- Kamp-Roelands, A.E.M. and C. J. Hibbitt (2002), *Internal control aspects of a business approach to sustainability issues*, A.I.V. Control, mei 2002, pp. B 0201-1/34
- Kamp-Roelands, A.E.M. (2002), *Milieuverslaggeving*, Praktijkboek Financieel Management, afl. 59, juni 2002, XII 1.4-01/16
- Kamp-Roelands, A.E.M. en C. J. Hibbitt (2002), *Maatschappelijk ondernemen, corporate governance en interne beheersing, een bedrijfsmatige aanpak van duurzaamheidvraagstukken*, Handboek Accountancy