POLITECNICO DI MILANO

Faculty of Environmental and Civil Engineering

Master of Science in Environmental and Geomatic Engineering

ISO 14001 THEORETICAL GAP ANALYSIS AND GUIDANCE FOR OBTAINING OF THE OPERATIONAL GAP ANALYSIS IN COMPANIES

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Master Graduation Thesis:

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Academic year 2015/2016

Abstract

No company today can allow to have non-controlled environmental impacts if it wants to be a part of the sustainable business. As the risk for keeping the environmental reputation of a company in the sustainable society is rising it can be understood from where the initiative for revising of a tool used worldwide for the Environmental Management has gained its importance.

Many companies in the world today have ISO14001 as their tool for controlling their Environmental Management. As the second revision of the standard has been done in September 2015 it is therefore of huge importance to understand the right guidance to follow in order to obtain the transition and to stay compliant with ISO.

The main source for my work was the literature published as well as communication with experts working in the field of Environmental Management in order to prioritize the changes in the right way and thus obtain a good theoretical base and guidance for companies who need to do the transition.

The goal of this study was to give a broad picture on what stands behind the ISO14001 and how understanding the history of ISO14001 and the ISO organization itself together combined with the conclusions made by experts can make a very thorough base for obtaining the operational GAP Analysis and thus make the transition easier to understand and implement. We must never forget that without looking back and understanding of the true needs for the changes we can never benefit from their implementation in the right way. The first step should always be to obtain a thorough theoretical GAP Analysis and in that way obtain the right questions to obtain the operational GAP Analysis meaning the incorporating of the changes in the company's Environmental Management System.

Abbreviations

EMS Environmental Management System
EP Environmental Policy
ISO International Organisation for Standardization
HLS High Level Structure
FCSG Future Challenges Study Group
SMEs Small and Medium sized Enterprises
GRI Global Reporting Initiative
TC 207 ISO Technical Committee – Environmental Management

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1.Introduction

The recent decades have introduced a new dimension of the human interaction with the environment. The concept of environmental management has resulted in strong impacts at all levels of the society. This can also be seen as a journey towards reaching better environmental sustainability through rules and regulations. Governments responded by setting up new laws and regulations for environmental protection, various environmental organisations were formed, and many companies adopted an Environmental Management Systems *(*EMS) to implement good standards of environmental behaviour.
By far the most commonly used and influential standard for third-party certification of EMS in the world today is the ISO 14001. There are an estimated 250,000 organisations that use the standard (BusinessGreen, 2012). ISO 14001 is commonly used as a foundation for all other environmental activities in organisations. There has been a steady growth in the number of organisation that use it and this proves that ISO 14001 is of great importance in the field of environmental management.

The ISO14001 was firstly published in 1996 and upgraded in 2004 (ISO14001:2004) and it was only a minor change. From 2004 till 2015 many aspects have significantly changed in the humans approach and interaction towards environment. Therefor a need for an alignment with the way organisations control ISO 14001 has arisen.

This time, there has been a more systematic approach to the upgrading process. A research group was formed to assess the need for change. In addition, thousands of users were consulted about their perception of ISO 14001 and their wishes for improvements. This update brought a more substantial change to the standard compared to the previous one. After years of work involving thousands of practitioners all over the globe the new ISO14001:2015 has been published. This thesis will evaluate the likely changes that will be made to the ISO 14001, judging from the new ISO14001:2015 published in September 2015.

The change to ISO14001:2015 will appear as a problem to organisations Companies currently using the ISO 14001 standard as they will have to update their EMS in accordance with the changes that will be implemented. These

companies are understandably concerned about the changes and their effect on the existing EMSs, whether it is officially certified or not.

The two research questions of the main interest are:

What are the major changes concerning the transition from the current ISO 14001:2004 to the new ISO14001:2015?

What will be the effects of these major changes?

Once we have identified the questions as the guideline for the research the appropriate method for finding the answers should be addressed. The initial data collection for this thesis was done in the form of literature research in the materials from BSI, in Google Scholar and on the website of the ISO organisation. The search words were “ISO 14001,” “ISO 14001 update,” “the effect of adopting ISO 14001,” and likewise.

The first step in the research approach was to gather enough information about the nature of environmental management, the ISO organisation, ISO 14001, and the changes brought by the new standard. The ISO14001:2004 was thoroughly approached in order to identify the gaps with the new ISO14001:2015. This was compared with the change in the society needs regarding the environment protection and has resulted in the broader understanding of the further efforts on the EMS incorporation in the modern society.

The second step was to collect information from experts working in this field. This was actually the verification process for the identified framework on which the analysis was applied.

The tool used for understanding the differences is the Gap analysis. It is a method that is used in various fields to find the general differences between an actual performance and the performance that is either desired or required. Gap analysis seeks to answer questions "where are we?" (current state) and "where do we want to be?" (target state). Gap analysis consists of firstly listing characteristic factors, like attributes, competencies and performance level of the present situation ("what is"), secondly listing factors needed to achieve future objectives ("what should be"), and then thirdly highlighting the gaps

that exist and need to be filled. Gap analysis helps organisations reflect on who they are and ask who they want to be in the future.

When the general expectation of performance in the industry is understood, in this case with the ISO14001:2015, it becomes possible to compare this expectation with the company's current level of performance. Such analysis can be performed at the strategic or operational level of an organisation.

In order to deeply understand what can be the expected result from a gap analysis it is important to clearly state the difference between gap analysis and environmental audits in the field of environmental management. One of the main differences is that gap analysis is used more to analyse the status of the current EMS compared to the requirements of a certain standard, in this case ISO 14001:2015. This means most often only one exercise, compared to a more regular frequency of environmental audits. Gap analysis is used mostly to analyse the actual functioning of the EMS, but only indirectly at the environmental performance that derives from it. Environmental auditing includes the assessment of compliance with all the requirements of the chosen standard, for example, the 55 “shalls” of ISO 14001. The audit includes, for example, assessment of the environmental organisation, its management and equipment performance and as such it is broader in technical dimension. Gap analysis analyses the EMS as such, rather than the details of the activities that derive from the EMS. As such, gap analysis is very useful for this research, as its focus is on the broad outlook of the EMS.

In this thesis, the gap analysis is done only on the sections of ISO 14001 likely to be significantly changed. These likely changes form seven categories. They were summarised into specific questions under each category, and form the framework for the gap analysis.

2 Theory behind the EMS

2.1 Environmental Management System

Environmental Management System (EMS) refers to the management of an organisation's environmental issues in a comprehensive, systematic, intentional and, usually, documented manner. It includes the structure of the organisation, the general planning, and the policy for environmental issues.
For developing, implementing and maintaining an EMS, some resources are needed. Formally, an EMS is defined as a system and database which integrates procedures and processes for training of personnel, monitoring, summarizing, and reporting of specialized environmental performance information to internal and external stakeholders of a firm.
Traditionally, the goals of an EMS have often been described as increasing compliance and reducing waste. In recent years, its scope has increased to also include areas such as climate change, life cycle thinking, social responsibility, biodiversity, or the restoration of animal habitats.

In practice, an EMS aims to act in many areas, including the following:

It enables the organisation to manage its environmental matters.

• An effective EMS aids organisations to deal with the planning, controlling and monitoring of policies. It provides a controlling structure that focuses on instant and long-term impacts of products, services, and processes on the environment.

• It creates a structure and consistency for organisations to deal with environmental concerns by allocating resources, assigning responsibility, and measuring and monitoring practices.

• It increases responsibility and ownership of environmental policies in an organisation and thus enhances accountability.

• It sets a structure for attaining objectives and desired outcomes, and for the training required to do so.

• It facilitates the understanding of legal requirements and thus increases awareness on a product or service's impact, significance, priorities, and objectives.

• It emphasises continual improvement of the system and in that way enables the implementation of policies and objectives. Additionally, this aids in reviewing and auditing the EMS, thus finding future opportunities.

• It influences contractors and suppliers to adopt an EMS on their own.

By far the most popular and influential EMS in the world is ISO 14001. In the most recent count, there are more than 250,000 organisations certified to the standard (BusinessGreen 2012). According to the experts interviewed, there is probably three times this number working with ISO without official certification. There is no standardised EMS in the world that rivals it in popularity.

2.2 International Organisation for Standardization

The twentieth century brought a growing understanding of the importance of standards for international cooperation and for trade in particular. Contrasting standards can create barriers to trade, giving some societies and organisations advantages over others. The aim of international standards is to provide clear identifiable references that are agreed upon and can thus foster fair competition in market economies. Equally, standards promote trade through enhanced overall product reliability and compatibility.

The International Organisation for Standardization (ISO) is the largest standard developing organisation in the world. The origin of ISO can be traced back to 1926 with the International Federation of the National Standardizing Associations (ISA). This Organisation focused heavily on mechanical engineering and was more effective on paper than in reality. It was disbanded in the middle of the Second World War in 1942. In 1946, it merged with the newly founded UNSCC (United Nations Standard Coordination Committee), only two years old at the time. Together, they formed the present day ISO, which has its headquarters in Geneva, in Switzerland .

The name of the organisation, ISO, is itself standardised. It is not, as many believe, an acronym but is derived from the Greek word “isos” meaning “equal”, referring to the fact that if two objects meet the same standard, they

should be equal. If ISO were an acronym, each language would translate the name into its own language, creating their own acronym. This would bring various different acronyms and would most definitely lead to confusion.

Since 1949, ISO has published more than 19,000 International Standards. These standards span various fields from agriculture, construction and mechanical engineering to managerial standards. ISO is a voluntary organisation whose members are recognised standard authorities, with each member representing one country. Each of the 164 member countries has one secretariat representative in Geneva. Additionally, each member country has a specific member body or institution which may differ in structure from country to country. Most of ISO's actual work is done by the 2700 technical committees, subcommittees, and working groups. Committees are made up of representatives from member countries interested in the particular field of a specific ISO subject. Each committee and subcommittee is headed by a secretariat from one of the member countries.

2.3 Publishing of an ISO standard

If a member body belonging to a member country is interested in the work of a committee (e.g., for forming or upgrading a standard), it is entitled to be a member of that committee. The standards are reached by consensus. In the case of ISO 14001, 75 per cent of the members of that committee have to agree upon the standards proposed. Each member body represents the interests of their country, be they those of manufacturers, consumers, professionals, the government, and so on.

In order for an ISO standard to be published, it needs a six stage process (ISO/IEC/Dirctives,, Part 1, 2012, p. 27-40):

Proposal stage—the need for a standard is assessed and members interested in being part of the formation of the standard are brought together.

Preparatory stage—the working draft of the standard is formed.

Committee stage—the completed draft is sent out to be commented upon. This stage can take some time, especially until a consensus is reached. The output of this stage is the Draft International Standard (DIS).

Enquiry stage—the DIS is circulated among all member bodies and voted upon. It needs to receive at least 75 per cent of the votes; otherwise it will be returned to the lower stages for further changes.

Approval stage—if the DIS passes 75 per cent of the vote, it becomes a Final Draft.

Publication stage—the Final Draft is circulated to all the member bodies for a final vote. If the standard passes this stage with 75 per cent of the vote, it officially becomes an ISO standard and is published accordingly.

The whole standardisation process can be long and time consuming. However, it welcomes participation and is transparent and open to scrutiny. Most of the experts interviewed agreed that the process is good and particularly inclusive. Comments are transparent and traceable. One of the main benefits with this process is that it aims to be multi-stakeholder—for example, by reaching out to developing countries as well as to smaller companies.

For a standard of this nature to work and for it to have a sufficient level of support, there is a need for people from all over the world to be part of its creation. It is a process that takes a considerable amount of time and costs a good deal of money, but a fundamentally better alternative approach does not seem to be available, according to the experts.

Experts agreed that the meeting of people face to face is very important, since much of the actual negotiation is done in non-ISO social settings. People negotiating need to have direct contact. The socialising that takes place in the evenings is essential in order to be able to make compromises and to find common ground. If there is no social contact and only debate, agreements would seldom be reached. If there were no face-to-face meetings, everyone would still only see their own objectives and would be less likely to seek compromises. The committee members sitting at the international negotiating level become like ambassadors of the negotiation results. They go back to their national bodies and explain the compromises and why they were made.

The main negative side of this whole process is the exact flip side of the positive ones—as it is so inclusive, the process is vastly time-consuming and

costs a significant amount of money. Due to this, it is almost only feasible for governmental bodies to be directly part of this process.

2.4 The history of the ISO 14001

Prior to the formation of ISO 14001, the corporate world had gained a rather negative image regarding environmental issues. There had been a number of widely reported accidents with drastic effects on the environment such as Bhopal in 1984 and Basil in 1986. Additionally, the increased environmental activism of the 1980s created a greater consumer awareness of the environmental issues. More environmental regulations were enacted and some organisations started to use their adherence to these regulations as marketing tools.

The 1992 Rio Conference on the Environment reflected increased global concerns about the environment and called for a world commitment to its protection. These environmental concerns in connection with the 1986 GATT negotiations in Uruguay, which were an impetus for the removal of non-tariff trade barriers, were of great influence behind the origin of ISO 14001 (The British Assessment Bureau, 2013).

In preparation for the 1992 Earth Summit in Rio, business leaders were asked by the UNCED's Secretary General Maurice Strong to advise on business and the environment.

A group was formed under the name of The Business Council for Sustainable Development, and became an influential force in the actual Rio conference, expressing a need for global standards vis-à-vis environmental performance. ISO reacted to this development by forming in 1991 the ISO Strategic Advisory Committee on the Environment (SAGE). This committee worked for two years and was a preparatory group. Following this, the TC 207 was established, a technological committee that until the present day (September 2013) has the responsibility for the environmental series within the ISO 14000 series. Just as the ISO 9000 quality standard series were inspired by the precursor British BS 5750 standard of 1979, so too were the ISO 14000 environmental standard series based on the British standard BS 7750 instituted in 1992.

When the ISO 9001 quality management standard was in the process of being formed, many organisations had limited interest in the process and did not really believe in its success. They were thus surprised by the overwhelming acceptance of ISO 9001. Many of these organisations were concerned with the development of the ISO 14001 and were more engaged in its developments. The British standards of BS 7750 were relaxed in order to be made acceptable for countries outside of Europe. In particular US companies, which can be subjected to costly civil suits, were very hesitant to approve a stringent environmental management standard. Their fear was that if they violated the standard, this might result in litigation. They also feared that the extensive documentation required by the ISO 14001 might be used against them in legal action for violating environmental regulations.

In the corporate world, two groups started to form with different motivations towards the establishing of ISO 14001. The first group really was concerned about the role of industry in achieving a sustainable economy. They wanted to show that the industrial sector was willing to take part in contributing to sustainability development.

The second group saw the development of ISO 14001 more as threatening their position. Starting from the time of the first 1992 Rio Conference, many companies felt at that time that governments would act by implementing a wide range of regulations on environmental issues. They began to take the lead in environmental management systems development to prevent governments leading that development.

The approach of these two groups merged together in the first edition of ISO 14001.

Some of the first group were quite disappointed about the outcome of the first edition of the standard. Many in this group were hoping to see a management system that was mainly aimed at improving the environmental performance of the organisation, rather than focusing so exclusively on the managerial system. They were trying to distance the ISO 14001 from the few year old ISO 9001, which they believed was more focused on processes than on actual outcomes.

2.5 Benefits and Drawbacks of ISO 14001

The benefits of ISO 14001 certification

The benefits of obtaining ISO certification far exceed the fulfilment of doing your part for the environment. Research has shown that adopting the ISO standard can result in better conformance to environmental regulations, which translates into a reduction of the risk for the organisation. The environmental alertness, together with the required documentation for the certification to ISO 14001, supports organisations in conforming to environmental regulations. Such an organisation will always be prepared for inspection by a regulatory agency- since they thoroughly follow the standard, there is little likelihood of violation of the environmental regulations.

In certain circumstances, the adoption of ISO 14001 can create greater marketability and better use of resources. Many organisations that applied the standard have found that it increased value creation with higher quality goods and services as well as levels of safety. Additionally, it has been shown that a certification to ISO 14001 improves the image of an organisation, and on certain occasions, increases its profits and. In some cases, the certification and documentation has assisted some organisations in acquiring capital, in defending itself during environmental litigation and in getting insurance or permits.

For some companies, embracing the standard has increased the market range of their goods and services. This is in particular true for companies from the developing world wanting to reach markets in the developed world. Various corporations and even governments have been requesting for suppliers that are ISO 14001 certified to uphold their environmental-friendly image and values.

Some organisations have found that the in-depth analysis required by the ISO 14001 certification has resulted in a more streamlined process, which translates into an increased efficiency in the use of resources and raw materials, which in turn lowers the organisation’s costs. Many companies have found ways to capture emissions and increase recycling, especially in the early phases of adopting the standard. In the long run, this has reduced the amount

of raw materials and utilities used. Studies have found that reducing the quantity of possibly dangerous substances in an end-product can result in drastic reduction of hazardous chemicals. This leads to a safer internal environment for employees and in some cases the possibility of reduced insurance premiums. Additionally, this can improve the employee moral by knowing that the workplace is safer and that they are contributing to the environmental effort.

The drawbacks of ISO 14001 certification

The fundamental criticism on ISO 14001 has to do with the fact that it is primarily focused on the EMS rather than on the actual environmental performance of a company. This means that it is theoretically possible for an organisation to have a well-run EMS without any actual improvements in its environmental performance. Proponents of the standard claim that although organisations can theoretically implement the standard without actual improvements, most companies do improve their environmental performance. The systemic look at the environmental issues of an organisation will almost always translate into concrete improvements for a company.
To be ISO 14001 certified requires regular external auditing. This costs a lot of money and time. Many have argued that smaller to medium sized companied find it difficult to cope with this demand (ISO/TC 207/SC1/SME Task Group, 2006, p.4). Questions have also risen in regard to the fairness of the certification process, since auditors are much harsher in some countries than others. It has also been argued that third-party assessment does not differentiate between organisations that barely meet the standard and the ones that surpass it.

Many also feel that since an organisation has to fulfil many requirements with ISO 14001, this ought to reduce other regulatory requirements. They feel that they are inspected twice rather than just once- by the ISO auditing, and by other regulatory bodies.
Finally, many argue that the ISO standards do not reflect the variety of size of businesses in the world. Most companies in the world are small to medium sized businesses, and for them to comply with the request of ISO 14001 can be difficult in terms of expertise and finance. The ISO organisation has also been concerned with this for some time and issued a research group to analyse what could be done to help them reach the standard more easily, and to see the

value in adopting it (ISO/TC 207/SC1/Strategic SME Group, 2005, p.13). Some of the modifications of the current draft are addressing these concerns.

2.6 ISO14001 compared with other ISO standards through the topic of biodiversity

There is a tendency to regard biodiversity-related activities as part of environmental or sustainability management. However, biodiversity-related activities can also be managed through energy management systems while these also provide appropriate correlations. The international standard ISO 26000 Guidance on Social Responsibility covers all the major aspects of biodiversity and emphasises the significance of this field when it comes to maintaining the reputation of a business.

- ISO 14001 Environmental Management
- ISO 50001 Energy Management
- ISO 26000 Guidance on Social Responsibility
- ISO series 37000 Management system standards for the “Sustainable development of communities”.

Biodiversity and ISO 14001 Environmental management systems

ISO 14001: 2004 refers to biodiversity and its content deals with the identification of “environmental aspects” (see Chapter 4.3.1 therein). Corresponding information is provided in the Annex (A 3.1 Environmental aspects) with, for example, references to “wildlife and biodiversity”.

The version of ISO / DIS 14001:2014 refers to biodiversity:

- In its introduction (non-normative)
- In a note on the definition of the term “environment” (explanatory)
- In a note about potential aspects of environmental policy (example)
- And twice in the annex (informative).

ISO 14001 is generalised and unspecific. Whether and to what extent a business decides to act with regard to the conservation of biodiversity depends on whether the business and its external consultants regard wildlife and biodiversity as relevant and strive for continuous improvement in this field.

As a management instrument, ISO 14001 is eminently suitable for continuously improving a company's biodiversity performance. All the management measures specified by ISO 14001 can be employed within the fields of activity related to the preservation of biodiversity. Once the relevance of the biodiversity aspect has been established, the business must define its current related status (environmental audit). There are aids that that will help with this, such as this guideline and the sector-specific Biodiversity Check, developed as part of the European Business and Biodiversity Campaign.

Based on the results of the environmental audit, concrete – and where possible quantifiable – goals need to be defined, along with the measures required to achieve them. At the beginning of the process, most businesses will find out during their environmental audit that they know very little about the relevance of biodiversity to their business and the effects of their business on biodiversity. The logical next step is then to develop goals and measures mostly to close the information loopholes, so that correct priorities can then be set. This guideline contains recommendations that should help with filling in the information gaps and for making concrete improvements. However, these recommendations need to be adapted to each particular sector and appropriately extended. The revised ISO 14001 was published in October 2015 and includes various references to the loss of ecosystem services and biodiversity as well as to natural resources. Organizations need to determine the significance of biodiversity and/or ecosystem services and put in place management objectives and measures, if these environmental aspects are relevant for the organisation. The certification authority, too, will have a basis to ask specific questions and to determine progress.

As the revised version does not contain more than the terms themselves, it will be by no means evident for either side what activities are to be undertaken and which aspects should be taken into account. This guideline is intended to help businesses with an ISO 14001 environmental management system integrate biodiversity-relevant activities in their management operations.

Further points of reference for biodiversity-related aspects can be found in the standard ISO 14031:2013 “Environmental Management – Environmental Performance Evaluation – Guidelines”. This makes direct reference to the term “biodiversity” and the indicators suggested in the second part are also relevant to biodiversity-related measures.

Biodiversity and ISO 50001 Energy management systems

The standard ISO 50001 rapidly became an internationally used reference framework for energy management shortly after its publication.

The normative text portion of ISO 50001 does not contain any direct reference to the aspect of biodiversity. However, there are certain points of reference in this regard.

The standard requires that the structure and maintenance of a systematic energy management system should be such that there is reduction of the environmental effects associated with a business's energy consumption. It should here be pointed out that the aim is not only to reduce greenhouse gas emissions but to ensure that “other environmental effects” are taken into account (see ISO 50001:2011 “Energy management systems – requirements with instructions for application”. This is of particular relevance in view of the fact that a large proportion of energy is obtained from fossil fuels and that the use of fossil fuels can have negative impacts on biodiversity. Potential examples would be damage to plants caused by sulphur dioxide emissions and disruption of a landscape due to the extraction of energy resources such as coal, oil and gas.

Environmental and energy management systems that require certification are now such that is obligatory for them to review the direct and indirect environmental effects when evaluating the significance of environmental factors, i.e. they must take into account the environmental compatibility of energies used.

The following is an example relating to energy management. When making practical use of a systematic energy management system as required by ISO 50001, it is in principle possible also to include biodiversity aspects in a related key indicator system. Thus key energy indicators can be employed to

determine the use of sources of energy (e.g. more use of renewable energies in comparison with fossil fuels). Where, for example, a business is in the process of gradually reducing its procurement of sources of energy that have adverse effects on biodiversity, this could be documented and demonstrated by recording transparent key energy indicators with indirect information about the energy sources. Thus not only the use of fossil fuels should be registered in the form of key indicators; the same should be the case for the use of renewable energies. Here it is important to bear in mind that even renewable energies have an impact on nature and land use. Renewable energy projects can have negative effects on biodiversity (wind parks biofuels).

A great deal of information is now available on the subject of "biodiversity and energy generation". The Energy and Biodiversity Initiative (EBI) – a joint project involving the energy companies BP, Chevron, Shell and Statoil and five international nature conservation associations – has developed various guidelines to improve the way that the management standards of mining and energy companies take biodiversity-relevant factors into account. To view the Energy and Biodiversity Initiative guidelines, go to **www.theebi.org**.

Biodiversity and ISO 26000 Guidance on Social Responsibility

ISO 26000 is not a management standard. This international standard has not been designed for certification purposes and therefore also does not stipulate specific requirements. However, countries such as Austria, Spain, Denmark, Brazil and Canada have issued national standards based on ISO 26000 relating to certification or are currently developing them. The ISO 26000 guidelines contain comprehensive references to biodiversity, including those in Field of activity 4 (ISO 26000:2011, see Chapter 6.5.6 Environment – Field of activity 4: environmental conservation, diversity of species and the restoration of natural habitats).

The description of Field of activity 4 refers to the substantial and frequently irreversible loss of habitats and the reduction in the diversity of species as a result of human activities. ISO 26000 emphasises environmental conservation and the restoration of natural habitats and ecosystem services as an important aspect of the social responsibilities of an organisation. Among other things ISO

26000 points out the need to make greater use of products provided by suppliers who employ more sustainable technologies and processes.

With reference to Human rights – Field of activity: Economic, social and cultural rights, ISO 26000 makes direct recommendations with regard to the CBD "access and benefit sharing (ABS)" concept. The rules on access to genetic resources and the fair sharing of benefits (access and benefit sharing, ABS) form one of the three basic pillars of the agreement on biodiversity (CBD) (also see Chapter 4.5.3 Access and benefit sharing).

Biodiversity and the ISO Series 37000 Sustainable development of communities

International and national working groups are currently developing recommendations for the standardisation of topics relevant to "sustainable development in cities and communities". The publication of a number of corresponding international standards in the ISO 37000 series was initiated in 2014.

With regard to biodiversity, two standards currently being compiled – ISO 37101 and ISO 37120 – are of particular interest here.

The standard ISO 37101 "Sustainable development of communities – Management systems – Requirements with guidance for resilience and smartness" stipulates the basic principles and requirements for all communities. Its publication is expected by end of 2015.

The conservation of biodiversity is an important aspect of sustainable development. The term "resilience" in the title refers to the integrating approach of the standard when it comes to maintaining the natural spaces within cities and communities to reinforce the natural resilience of a system.

On the one hand, communities can influence the general conditions for fostering biodiversity within their sphere of responsibility by planning and compiling regulations. On the other hand, they also have to fulfil statutory requirements and can also play an active role in the conservation of biodiversity. In this case strategic and long-term planning is a requirement for

sustainable, efficient and effective protection of local biodiversity. In the following are several examples of potential activities.

By preserving the natural design and cultivation of municipal spaces, the outdoor areas of administrative buildings, schools and nursery schools, municipal parks and green spaces, communities can make an important contribution to local biodiversity. A large range of activities can be carried out in communal forests that will rapidly have a positive effect on biological diversity. Any dead wood remaining in the forest and all remaining biotope trees provide a habitat for a variety of animal and plant species.

In Belgium, it is not the responsibility of the local authorities to designate nature conservation areas. Nevertheless, they can facilitate the processes that will result in such a designation. Statutes and various planning instruments (such as building regulations and green space planning) can directly influence the way that biodiversity is dealt with and shift some of the responsibility onto private investors.

Communities are important customers and are increasingly being required to take into account the conservation of biodiversity and ecosystem services as a criterion within the concept of green public procurement when awarding contracts. Moreover, communities control their own municipal activities, which – like those of private companies – have direct and indirect effects on biodiversity. However, biodiversity has rarely been a factor in operational management, even for local authority organisations.

The ISO 37120:2014 standard bears the title “Sustainable Development in Communities – Indicators for City Services and Quality of Life”. The aim of this international standard is to standardise a system consisting of 102 indicators (47 core and 55 supporting indicators) to evaluate the long-term development of and quality of life in urban areas.

In the section on urban planning, ISO 37120 contains indicators for all the aforementioned fields of activity. In addition, the following specific biodiversity indicators are included.

- Annual number of trees planted
- Percentage change in number of native species;

2.7 The First Update of ISO 14001 in 2004

When the first process of updating ISO 14001 started, the ISO community had two aims: to make clear what clarification was needed regarding the requirements in ISO 14001, and to better integrate ISO 14001 with ISO 9001. To reach both of these aims, some modifications were needed and some additions were made to 16 of the 20 definitions in ISO 14001.
In order to integrate ISO 14001 with ISO 9001, the structure and operation of the standard was formalised, which translated into more documentation, more performance measurement, and an increased emphasis on reporting to top management. Additionally, there was an increased focus on legal requirements.
In some places of ISO 14001:1996, vague descriptions were clarified. For example, in regards to the EMS, the 1996 version states that the "organisation shall establish and maintain an environmental management system" (ISO 14001:1996, 4.1). This is a very lose requirement: there is nothing about a written system, training, and so on. The 2004 upgrade states that the "organisation shall establish, document, implement, maintain and continually improve an environmental management system in accordance with the requirements of this international standard and determine how it will fulfil these requirements" (ISO 14001:1996, 4.1). This version really clarifies that the organisation actually needs to fulfil this requirement.
Most of the changes were rather minor ones. For example, the 2004 upgrade to the requirements on environmental policy added that an organisation would now have to take into account the scope of the EMS while defining the policy. Additionally, the policy should comply with applicable legal and other requirements, and it should be communicated (ISO 14001:1996, 4.1).

A small change was also made to the communication section, demanding that an organisation establish a method in communicating with external parties. The old version mentioned nothing similar to this (ISO 14001:2004, 4.4.3).

The section about documentations was changed considerably, bringing a need to document the scope of an EMS, objectives, targets, and environmental policy. Additionally, the 2004 upgrade made it a requirement to identify and thus develop the documentation necessary to fulfil the demands of the standard (ISO 14001:2004, 4.5.4).

In a few sections, the wording became more precise and demanding regarding the implementation of the identified processes. For example, the 1996 version

required organisations to identify non-conformities. The 2004 upgrade demanded in addition that organisations take action to address the identified non-conformities (ISO 14001:2004, 4.5.3).

Similarly, the 1996 version demanded the calibrating and maintenance of monitoring equipment. The 2004 upgrade added to this that this equipment should actually be used to monitor and measure the key environmental characteristics (ISO 14001:2004, 4.5.1). A new section was also included called "Evaluation of Compliance" which emphasised that an organisation must demonstrate how it complies with legal and other requirements (ISO 14001:2004, 4.5.2). Another example is found in the section dealing with emergency response. In the 1996 version, organisations were asked to establish and maintain procedures to identify and respond to potential environmental emergency situations. The 2004 upgrade added that an organisation would actually have to use these procedures and not only establish and maintain them (ISO 14001:2004, 4.4.7).

Significant changes were made to the section on management review in which material on management review inputs and outputs was added. The material on management inputs added audit results, changes in the environmental aspects, communications and complaints from external parties, legal changes, previous management reviews, the status of previous corrective and preventive actions, follow-up actions, and recommendations for improvement. It was much more detailed than the 1996 version. Management output needed to include decisions and actions regarding the environmental policy, objectives, or targets, and to improve an organisation's EMS. Overall, outputs should reveal an organisation's commitment to continuous improvement (ISO 14001:2004, 4.6).

Some of the experts stated that many people were disappointed with the 2004 upgrade and that so much time and effort had gone into changing the standard but that this was not translated into substantial change. However, the changes were actually not meant to be extensive in nature, but were rather designed as a refinement of the existing standards. In retrospect, one could say that the ISO community reached its goals with the changes of 2004.

2.8 The second Update of ISO14001 in 2015

The two most influential factors affecting the upgrade on ISO 14001 are the High Level Structure (HLS) and the report from the Future Challenges Study Group (FCSG).

2.8.1 High Level Structure

Over the years, ISO published various managerial standards of different shapes and structures. For organisations operating several managerial standards, having different managerial structures can be difficult. There was pressure on the ISO organisation for some time to integrate all ISO managerial standards into a unified format that would make them easier to work together. This was for example one of the suggestions from the ISO SME Task Group (ISO/TC 207/SC1/SME Task Group, 2006), which explored how to increase the benefit of ISO 14001 from small- to medium-sized organisations. The ISO organisation thus produced a document called the High Level Structure that was furnished with a well-defined and structured identical core text along with common terms as well as essential definitions.

The aim of the HLS is to enhance the consistency and alignment of ISO management system standards by providing unifying and agreed upon high level structure. This greatly helps organisations with more than one ISO managerial standard. With the HLS, the general standards of ISO 14001 will be aligned and each of them will have discipline-specific requirements, as needed. The HLS easily walks organisations through the steps needed to safety, quality, or even food safety.

The aim of these changes is that the common approach to new management system standards will increase the value of such standards to users. It is particularly aimed at organisations operating a single management system that is designed to meet the requirements of more than one management's systems standard. This is often called an integrated management system.

The HLS is applicable to all the ISO Type A managerial system standards. A Type A management system standard is defined as a "standard that is intended to provide the market place with relevant specifications for the management system of an Organisation to demonstrate its capability to meet internal and

external requirements (e.g., by assessment of that capability by internal or external parties)" (ISO Guide 83, 2011, p. 2).

Under the HLS, ISO 14001 will change from its present day 4 sections to 10 sections. With the increase of six additional sections, each section becomes clearer in its structure.

The ISO organisation has imposed a strict prohibition of the deletion any part of the HLS text in the formation of other managerial standards. Text can only be added where it is needed to make the managerial standards work for specific requirements, but nothing can be removed from the core text. This actually makes certain changes to the ISO 14001 very predictable.

The new HLS structure contains 10 clauses that are applicable to all ISO type A managerial standards, as outlined below (ISO Guide 83, 2011):

Clause 1—Scope

The nature of the scope in different managerial standards varies according to the different subject matter. The HLS describes this very briefly.

Clause 2—Normative references

The nature of the normative references in different managerial standards varies according to the different subject matter. The HLS describes this very briefly.

Clause 3—Terms and definitions

This clause contains definitions of the terms that are deemed to be an integral part of the common text for all the managerial standards. Altogether there are 22 terms defined, all of which have to be included in clause 3 of each independent managerial standard. Each specific standard will additionally use other definitions necessary for that specific subject.

Here follows two examples of definitions from clause 3:

"3.01 Organisation: Person or group of people that has its own functions with responsibilities, authorities and relationships to achieve its objectives.

3.05 Top management: Person or group of people who directs and controls an Organisation (3.01) at the highest level.

Note 1 to entry: Top management has the power to delegate authority and provide resources within the Organisation.

Note 2 to entry: If the scope of the management system (3.04) covers only part of an Organisation then top management refers to those who direct and control that part of the Organisation."

Clause 4—Context of the Organisation

Clause 4 contains four sub-clauses:

The first sub-clause is called "understanding the organisation and its context": the organisation shall determine external and internal subjects relevant to the aim of the organisation and deemed to influence the intended outcomes.

The second sub-clause is called "understanding the needs and expectation of interested parties": the organisation shall identify both the relevant interested parties and their needs and requirements from the organisation.

The third sub-clause determines the scope of the management system. In the scope setting, the organisation needs to take note of the two previous sub-clauses.

The fourth sub-clause explains that any managerial system is a continuous process of ongoing change and that the organisation therefore needs to focus on regular improvements and to put in place processes to facilitate this.

Clause 5—Leadership

Clause 5 contains three sub-clauses:

The first sub-clause is concerned with leadership and commitment, presenting an increased focus on the role of top management to lead and to be committed to the managerial system. For example, the policy and the objectives of a specific managerial standard must be established and in accordance with the general strategy of the organisation.

The second sub-clause regards policy and emphasises the role of top management. Additionally, it requires the policy of the managerial standard to be available to interested parties.

The third sub-clause is called “organisational roles, responsibilities and authorities”: the role of top management is made very clear. They should assign the relevant roles, responsibilities, and authorities, and communicate this within the organisation. Top management is responsible for the overall system and for reporting on its performance.

Clause 6—Planning

The organisation needs to identify the risks and opportunities that come from evaluating its external and internal issues, as was done in 4.1. Next, the organisation needs to plan how to address both risks and opportunities, and later to evaluate the effectiveness of these actions.

The organisation needs to also establish relevant objectives that need to be consistent with the policy and ideally be measurable, monitored, communicated, and updated. All the above requirements need to be fully documented.

Clause 7—Support

The organisation is required to provide sufficient support for the managerial system, so that the necessary people have the proper competence and awareness of the EMS and its benefits. The organisation needs to determine the need for both external and internal communication.

The last part of this clause is focused on the documented information, the creation and the updating as well as the control of the documented information.

Clause 8—Operation

This clause leads from the information in clause 6.1 on risks and opportunities. The organisation needs to plan, implement, and control the processes that are deemed to address the information identified earlier. The organisation needs to have criteria to assess the outcome, and these need to be fully documented.

Clause 9—Performance evaluation

Clause 9 contains three sub-clauses:

The first sub-clause relates to monitoring, measuring, analysing and evaluating. The organisation needs to assess what needs to be monitored, how it is done, when it is done, and when and how this is analysed and evaluated.

The second sub-clause focuses on what is demanded from the internal audit.

The third sub-clause identifies what is demanded in the management review.

Clause 10—Improvement

The first part of this clause deals with nonconformity. The organisation needs to have a detailed structure of how to deal with nonconformity, and this structure needs to be reviewed regularly.

The second part emphasises the need for continuous improvement.

There are significant new elements in the HLS that help to elevate the status and importance of environmental management in companies to a more strategic level, in particular clauses 4 and 5 and parts of clause 6. This however does not dilute in any way the operational focus of ISO 14001, which has often been seen as its chief strength. The new strategic focus encourages companies to better integrate the EMS into the core part of their business, rather than running it as a parallel managerial system, as is often the case. Often, these two systems have little to do with one another. The new text recognises the use of the broad concept of risk and the need to understand risk in the context of the management system. It also encourages everyone to view preventive action as a broader concept than one which simply prevents an incident from reoccurring.

ISO 14001 is the first one of the major managerial standards to adopt the new HLS structure.

The following table identifies the changes that the ISO14001:2015 will make to the standard compared to the 2004 version. These changes are related to the HLS and will therefore not be able to be changed.

Correspondence between ISO 14001: 2015 and ISO 14001:2004

ISO14001:2015		ISO14001:2004	
Context of the organisation (title only)	4		
Understanding the organisation and its context	4.1		
Understanding the needs and expectations of interested parties	4.2		
Determining the scope of the environmental management system	4.3	General requirements	4.1
Environmental management system	4.4	General requirements	4.1
Leadership (title only)	5	Resources, roles, responsibility and authority	
Leadership and commitment	5.1	Environmental policy	4.4.1
Policy	5.2	Resources, roles, responsibility and authority	4.2
Organisation roles, responsibilities and authorities	5.3	Planning (title only)	4.4.1
Planning (title only)	6		4.3
Actions to address risks and opportunities (title only)	6.1		
General	6.1.1		
Environmental aspects	6.1.2	Environmental aspects	4.3.1
Legal requirements and voluntary obligations	6.1.3	Legal and other requirements	4.3.2
Environmental objectives and planning to achieve them (title only)	6.2	Objectives, targets and programme(s)	4.3.3
Environmental objectives	6.2.1	Objectives, targets and programme(s)	4.3.3
Environmental improvements programmes	6.2.2	Objectives, targets and programme(s)	4.3.3
Support (title only)	7	Implementation and operation (title only)	4.4
Resources	7.1	Resources, roles, responsibility and authority	4.4.1
Competence	7.2	Competence, training and awareness	4.4.2
Awareness	7.3	Competence, training and awareness	4.4.2
Communication (title only)	7.4	Communication	4.4.3

General	7.4.1	Communication	4.4.3
Internal communication	7.4.2	Communication	4.4.3
External communication and reporting	7.4.3	Communication	4.4.3
Documented information (title only)	7.5	Documentation	4.4.4
General	7.5.1	Documentation	4.4.4
Creating and updating	7.5.2	Control of documentation	4.4.5
Control of documented information	7.5.3	Control of documentation	4.4.5
Operation (title only)	8	Implementation and operation (title only)	4.4
Operational planning and control	8.1	Operational control	4.4.6
Value chain planning and control	8.2	Operational control	4.4.6
Emergency preparedness and response	8.3	Emergency preparedness and response	4.4.7
Performance evaluation (title only)	9	Checking (title only)	4.5
Monitoring, measurement, analysis and evaluation (title only)	9.1	Monitoring and measurement	4.5.1
General	9.1.1	Monitoring and measurement	4.5.1
Evaluation of compliance	9.1.2	Evaluation of compliance	4.5.2
Internal audit	9.2	Internal audit	4.5.5
Management review	9.3	Management review	4.6
Improvement (title only)	10		
Nonconformity and corrective action	10.1	Nonconformity, corrective action and preventive action	4.5.3
Continual improvement	10.2	General requirements	4.1

2.8.2 Future Challenges Study Group

When the revision of the second edition of ISO 14001 started in the year 2000, Netherlands was the only country to vote against the revision and the scope of the revision. The Dutch representatives argued that before starting a new revision there should be a mapping of the expectations and requirements by organisations using an EMS. The process carried on without following the Dutch suggestion. This was the first upgrade to the standard and the outcome of that change proved to be rather limited (Netherlands Normalization Institute, 2000).

The Dutch resistance was not in vain. When ideas began to surface that another upgrade to ISO 14001 was needed, around 2007–2008, they were given the opportunity to lead a group that would indeed explore what changes were really required to be made to the ISO 14001. This group was given the

name the Future Challenges Study Group (FCSG). It started its work in 2008 and published its final report on the future challenges of the EMS and ISO 14001 in 2010 (ISO/TC 207/SC1/Future challenges Study group, 2010). The group looked into the future challenges facing the EMS, including stakeholders' needs, since ISO 14001 was first published in 1996. The group not only analysed ISO 14001, it also considered new approaches in the field of EMS.
The study group came up with 11 themes to be explored in the work of upgrading ISO 14001. They recommended subjects that needed to be explored further, without specific ways how these should be implemented.
Each of these themes will now be briefly explored (FCSGR):

1. EMS as part of sustainability and social responsibility

This theme is highly influenced by the ISO 26000 guidance on social responsibility. ISO 26000 is only guidance in these issues and not a standard as such that can be certified.
The recommendation of the FCSG was that more focus should be put on transparency and accountability in connection with environmental management, environmental issues, and environmental performance.

Additionally, the group recommended that more attention should be placed on the value chain influence. The scope of the standard should be enhanced to include the responsibility to the upstream and downstream issues where relevant.

Environmental management should be more clearly linked to sustainable development, and the concept of prevention of pollution should be clarified and broadened.

2. EMS and improvement of environmental performance

Although it is obvious to most people that the aim of an enhanced EMS is actually to improve the environmental performance of the organisation using it, this did not receive enough focus and, according to the FCSG, should be made clearer and should be emphasised more. The FCSG recommended that the requirement of enhancing the environmental improvement of the organisation that adopts it should be stated clearly in ISO 14001.

The FCSG also recommended strengthening the performance evaluation, since this is the key for any organisation to evaluate whether they are increasing their environmental performance.

3. EMS and compliance with legal and other external requirements

From the perspective of the regulatory authorities, the compliances with legal requirements are of paramount importance for an EMS. Since the term “legal requirements” has a different meaning in different countries, it has proved difficult to standardise what is meant precisely by this concept.

The FCSG recommended that ISO clearly describe the approach of achieving legal compliance and what is meant more precisely by this concept, and that they clarify the meaning of demonstrating the commitment to legal compliance. It also suggested that it might be wise to look into the concept of demonstrating knowledge and an understanding of the organisation’s compliance status.

4. EMS and overall strategic business management

In practice, ISO 14001 has been used more as an operational management system and has not been a part of strategic business management. As such, it has formed a parallel managerial system from the “real” managerial system of organisations. This was not the idea from the original standard.

The FCSG said that theme four had actually several sides to it and that each needed to be addressed:

• The integration of the EMS with the overall business management of the company, referring to areas such as corporate purchasing, the design processes, engineering, and such. Products and process information can be included in this part.

• The EMS part of overall sustainability and sustainable development**,** addressed in theme 1.

• The integration of the EMS with other managerial systems**,** such as ISO 9001.

• The issues of risk management (in the business sense) and environmental management**,** since environmental risks can have a major risk for an organisation as a whole.

The recommendation of the FCSG was that more focus should be placed on the benefits and opportunities that organisations have from an EMS on a strategic level, not only in its introduction but also in its requirements.

It also recommended that there should be a clear link between the EMS and the strategic level of the core business, both on a product level and service level as well as with regards to stakeholders.

5. EMS and conformity assessment

When an organisation is certified to an international standard such as the ISO 14001, the issue arises of the uneven evaluation of the organisation in and between countries. This is almost an unavoidable drawback of the certification processes. This is an issue that should be of paramount importance when designing standards.

The FCSG acknowledged that many of the problems regarding these issues derived from reasons beyond the control of the ones for updating the ISO 14001 standards. However, steps should be taken to reduce the possibility of this happening.

The recommendation of the FCSG was that the requirements in ISO 14001 be clear and explicit, and when necessary, a clearer guidance in the Annex A be provided. The purpose of this annex is to avoid a misinterpretation of the requirements.

6. EMS and uptake in small organisations

The issue of the suitability of Small to medium organisation (SME) for the use of ISO 14001 has been an issue since the standard first appeared. There has been much research about this issue and one of the most well-known is the ISO report: The Global Use of Environmental Management System by Small and Medium Enterprises (ISO/TC 207/SC1/Strategic SME Group, 2005), which

presents several ways to adapt the ISO 14001 so that it can be used by SME more easily.

The FCSG pointed out that the ISO organisation should maintain the applicability of the ISO 14001 for SME. They recommended the use of the general guidelines of ISO organisation for SME, called CEN guide 17, which gives guidance in how to write standards that take micro and SME enterprises into account.

7. EMS and environmental impacts in the value/supply chain

In the ISO 14001, organisations look into environmental aspects that are under their control. Some interpret this to mean areas that are only directly under their control, usually meaning in-house production or services, and leaving out the rest. Some other companies have also included aspects only partly under its control, either up or downstream in the production. There has been an increased focus lately on the organisations to take more responsibility on both of these issues.

The FCSG gave as its recommendation that organisations should address the whole value chain and life cycle thinking in the assessment of their environmental aspects.

8. EMS and engaging stakeholders

The current version of the ISO 14001 does establish certain requirements for what is called interested parties, instead of the term stakeholders. According to the 4.3.3., “the view of interested parties shall be considered in the organisational objectives, targets and programmes.” Although the requirements are very clearly stated, how they should be applied in practice is not clear at all.

The ISO 26000 used the term stakeholder extensively and in all practical terms in the same way as the ISO 14001 uses interested parties.

The recommendation of the FCSG is to use the term stakeholder instead of “interested parties”, and to give an approach on identifying, consulting and communicating with the stakeholders on environmental issues.

9. EMS and parallel or sub systems (GHG, energy)

There has been a proliferation of various standards and management systems for various different requirements in the field of environmental management, for example with the energy use and regarding climate change. ISO 14001 has been designed to be applicable as a generic managerial standard to many types of environmental concerns.

The FCSG recommends that this general applicability of the standard should be more emphasised as well as the benefits of addressing environmental issues in an integrated manner with a broader perspective. It also recommends the benefits of clarifying the applicability of the ISO 14001 to the more specific aspects such as the energy use.

10. EMS and external communication (including product information)

The current version of ISO 14001 states some requirements for the organisation to communicate in regards to their EMS with the environmental policy, how to respond to the relevant communication from external parties and the need to decide in what way the communication to the external world is conducted.

The FCSG recommend adding requirements to an external communication strategy. This would include defining the objectives of this strategy, identifying the relevant stakeholders, and in what and when the strategy should be communicated.

11. Positioning of EMS in (inter)national policy agendas

Internationally, from the environmental perspective regarding for example climate change and resource use, the EMS and ISO 14001 have had little focus. FCSG claimed that there are clear indications that ISO 14001 can help organisations reduce the climate gases emissions and increase the resource efficiency.

The FCSG recommended that these benefits should be pointed at and examples of these should be published.

Many of these themes had a direct effect on the ISO14001:2015. The experts interviewed for this research agreed that it was very important to have the

FCSG report before the actual work had processed with the upgrade. The report acted in some ways as one of the guiding lights for the whole process. Additionally, many of the comments that were made on the ISO14001:2015 frequently mentioned the FCSG to justify a support for their argument (ISO/TC 207/SC1/WG 5, 2013).

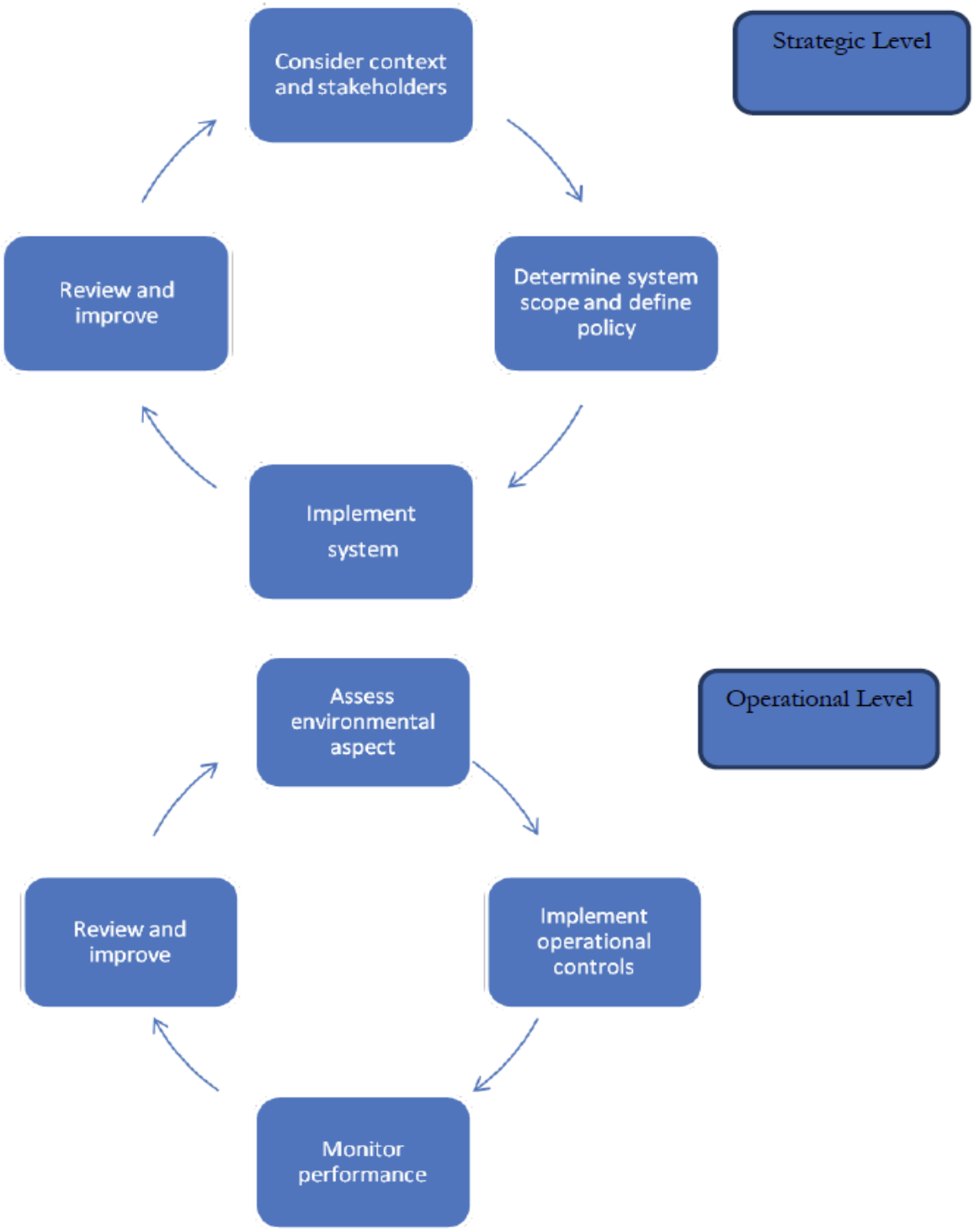
3 Theoretical GAP Analyses

3.1 Identified Changes

Seven themes of substantial changes were identified. Two of these themes have subcategories. Some of these points have overlapping issues but they are sufficiently different to merit standing as a separate theme. There is a particular link between the themes of strategy and leadership. Some of the points expressed could belong to either of the two groups. Nonetheless, for the purpose of clarity, it was decided to separate the two groups.
As mentioned previously, the two greatest influences on the current draft are the new ISO HLS for managerial standards and the FCSG report. Additionally, according to the experts, there was a very strong desire not to reduce the demands from the current version.
One of the recommendations of the FCSG was that ISO 14001 would be aligned with ISO 26000, the guidance on social responsibility, both in language and principles (FCSGR, p. 3). Throughout the current draft, there is indeed a stronger feeling of relationship to social responsibility. This is of course not always concretely apparent, but themes such as the value chain and interested parties involvement are part of social responsibility. There are also four environmental themes in ISO 26000, with one of them, the prevention of pollution, already converted in the current edition of ISO 14001. Although the other three themes are not explicitly mentioned in the ISO14001:2015, there is the catch all “or other relevant environmental issues”. This is mentioned here since social responsibility is not one of the seven themes that the author judged to be part of the major change. This is not because of lack of importance but rather because the issue is fused throughout parts of the draft.
We will now explore the 7 themes of substantial changes to ISO 14001:2015 :

1. More focus on strategy and business concepts

The new ISO14001:2015 contains clauses concerning the understanding of an organisation and the context of the organisation, and demands an understanding of the needs and expectations of interested parties. This significant change of the standard aims at ensuring that the organisation includes strategic considerations when establishing the scope of its EMS, making its core commitments and developing its environmental policy.
This is a substantial change from the current version, where the only direct requirement is the identification and evaluation of environmental issues in general. This has to be done after the environmental policy has been established. It is suggested in the Annex that an initial review of issues should be done prior to developing the policy, but this is not a set requirement.
Therefore, it is not clear whether this should be on an operational level or on a strategic one. The experts interviewed agreed that most organisations use this only on an operational level.
The ISO14001:2015 includes both the operational and strategic level, with requirements for general consideration of risk and opportunities as well as assessment of the operational environmental aspects. In its introduction, it is stated that “environmental management encompasses a full range of issues, including those with strategic and competitive implications”. This whole distinction between strategic and operational levels in the EMS is new for many organisations and they may find some difficulties in dealing with separating strategic and operational environmental issues. This focus should be directed during the development of the EMS and occasionally after that, in a similar manner to when operational environmental aspects are reflected upon.


Strategic Level
Consider context and stakeholders
Determine system scope and define policy
Implement system
Review and improve
Operational Level
Assess environmental aspect
Implement operational controls
Monitor performance
Review and improve

In order to understand the organisation and its context, an awareness of internal and external issues is needed in regards to what is relevant to the organisation's purpose and what can affect the efficiency of the EMS (ISO14001:2015, 4.1). This means that there is a need for the strategic consideration of environmental issues that have implications on broader organisational goals. This is in accordance with the recommendations of the FCSG, which stated that environmental management should be much better integrated with the general business strategy (FCSGR, p.8). Clause 4, a new clause, refers to the implications of external environmental conditions, which, in the opinion of some of the experts interviewed, is an indirect push towards addressing climate change adaptation (ISO14001:2015, 4.1, 4.2).
In ISO14001:2015, the data from environmental impacts assessment and the identification of legal requirements is more of an operational issue (ISO14001:2015, 6.1). Prior to this, the organisation needed to carry out a form of strength-weakness analysis as a starting point for its EMS, an analysis done by both assessing the context of the organisation and determining the needs of interested parties (ISO14001:2015, 4.1, 4.2).
There is added attention on understanding the external as well as the internal context of the organisation (ISO14001:2015, 4.1). The needs and expectations of interested parties becomes a concern to the organisation since it now needs to determine this (ISO14001:2015, 4.2). Determining this context becomes a crucial point when setting the scope of the EMS and planning actions to address risks and opportunities (ISO14001:2015, 4.3, 6.1).

The new clause (ISO14001:2015, 4.2) which addresses the consideration of the needs and expectations of interested parties demands the identification of these relevant parties and their requirements from the point of view of the EMS. The standard does not recommend how or when these needs should be assessed since they vary greatly in significance and nature from one organisation to another.
When the organisation has assessed its inner and outer context as well as the needs of the interested parties, this becomes important raw material in determining the scope of the EMS. Furthermore, the environmental policy needs to mirror the direction of the organisation that is the general strategic policy (ISO14001:2015, 4.3, 5.2).
There is a requirement for more details in the scope of the EMS. Importantly, the scope needs to evaluate the external impacts on the organisation. This is likely to include the impacts that climate change may have on the organisation (ISO14001:2015, 4.3). It is also emphasised that the organisation should not only limit negative impacts but that it also needs to take advantage of

opportunities (ISO14001:2015, 6.1). It is also important for the organisation not to overlook the addition of important input to the scope of the system through information on the needs of interested parties. Additionally, the scope of the EMS can include outsourced processes.
The current draft presents a change derived from the HLS. The ISO14001:2015 introduces specific requirements for the management of risk and opportunities, addressed indirectly to some degree in the current version in the identification and evaluation of environmental aspects and legal requirements. These are much broader in ISO14001:2015, containing the potential business risks and opportunities arising from environmental impacts. An organisation now needs to evaluate these on a broader scale than before, which might prove to be a challenge to some organisations (ISO14001:2015, 6.1).

According to most of the experts interviewed, the aim of these new requirements is greater integration of environmental management in business processes. The intention is to ensure that environmental issues are promoted to the strategic level and are included as one of the inputs of longer-term planning. This might then translate to greater business benefits from improved environmental performance and could be a part of removing obstacles that hinder environmental improvements and harmonising business and environmental goals.

2. More focus on commitment and leadership

The whole clause about leadership is new for ISO 14001. It stresses the fact that management has a major role in directing environmental management. This clause 5 contains the links between the strategic objectives of an organisation and its environmental objectives and policy. This is a major difference from the old version.
In the current version of the standard what is asked of top management, those who “control or direct organisations at the highest level” (ISO14001:2015, 3.11), is to define the organisation’s environmental policy, to appoint a management representative responsible for the EMS and for reporting back to them, and to undertake the management review (ISO 14001:2004). This has often resulted in a situation where top management has very limited contact with meaningful environmental management. They instead have relied on environmental management to take care of it from start to finish.
Now, there is a clear definition of top management and on how the EMS needs to be aligned with the organisation’s overall strategy. There is a need to

consider environmental performance as part of strategic planning. The integration of the EMS into the core business process is required by top managers (ISO14001:2015, 5.1).

The new version of the standard demands more from top management, including (ISO14001:2015, 5.1):

• Understanding the organisation's context, in terms of its environmental risks, opportunities, and interested parties;

• Ensuring that the environmental policy and objectives are compatible with the strategic direction of the organisation;

• Considering environmental performance in strategic planning;

• Ensuring the integration of the EMS into the organisation's business processes;

• Ensuring that adequate resources are available;

• Communicating the importance of effective environmental management;

• Ensuring that the environmental management system achieves its intended outcomes and promotes continual improvement; and

• Directing and supporting staff to contribute to the effectiveness of the EMS, and supporting those responsible for environmental management.

These new responsibilities for top management far exceed the ones in the current version. They are meant to encourage them to be more focused on environmental management and to increase their support. This strong criterion gives auditors more authority to test the involvement and support from top management with regard to environmental management. Top management's strong involvement is needed to foster organisational behaviour change.

Expanded role of environmental policy

In ISO14001:2015, the role of environmental policy and policy commitment is expanded by the need to include the support for environmental protection. This is however specific to the context of the organisation, so there is a degree of flexibility in its application. There are no specific factors mentioned that need to be addressed. In the current version, the organisation's only commitment is to prevent pollution. The new version on the other hand asks an organisation to address its environmental impacts more widely, such as sustainable resource use, climate change mitigation and adaptation, and protection of biodiversity and ecosystems, or other relevant environmental issues (ISO14001:2015, 5.2). This means that the organisation's policy commitment is increased.
The organisation needs to assess the need for each interested party to be provided with the environmental policy, as appropriate.

3. More focus on environmental aspects and the value chain

In the ISO14001:2015, the environmental aspect is expanded from the current version to include the life cycle perspective (ISO14001:2015, 8.2). Some organisations have done this anyway with ISO14001, but many have not done this at all. Life cycle perspective considers the impact of the organisation's products/ services in its entirety.
The life cycle perspective is not the same as life cycle assessment.
Throughout the upgrades of ISO 14001, what the organisation needs to plan for and control has gradually become more explicit. The first addition already specified the environmental aspects that can be controlled, and the ones that can only be influenced. Later on, it became apparent that in some countries, especially in the United States, environmental aspects were seen as the one category that may be controlled and influenced. Thus, in the second addition, it was made more explicit that there are two categories of environmental aspects: those that you can control and those that you can influence.
A number of examples of how that would work out in the value chain were given in the Annex (ISO 14001:2004, A.3.1). Now, one step further has been taken. The new draft explicitly addresses the concept of value chain and the concept of the life cycle approach. According to some of the experts interviewed, this was already present behind the scenes but is now much more clearly expressed.
The current edition of ISO 14001 emphasises the need to address the impacts of activities, products, and services of an organisation. The focus is very much

on controlling the organisation's own activities. The FCSG report urged to expand the focus of organisations in their environmental scope. It suggested that the new version should address life cycle thinking and the value chain perspective more clearly in the identification and evaluation of environmental aspects (FCSGR, p. 12).

The new draft now expands the standard with the requirements to control or influence upstream and downstream processes. Specifically mentioned are outsourced activities and the procurements of goods and services. This also captures the process behind the design and development of the organisation's good and services. The aim here is to capture the environmental impacts that occur over which the organisation has some control (ISO14001:2015, 8.2).

The current draft makes it clear that the subject of value chain should be in relation to significant aspects. Organisations now need to determine if they do have the opportunity for control or influence in the value chain (ISO14001:2015, 8.2). The draft clearly defines what it means by the value chain, supply chain, and lifecycle, which are essential in seeing where and how organisations can wield control or influence (ISO14001:2015, 3.34A, 3.34B, 3.34C).

How influential the concept of value chain will be for environmental management largely depends on how external auditors will evaluate the processes applied to the planning and control of the concept. The approach used for assessing the significance of value chain aspects will likely be a starting point. However, the auditors will most likely be interested in how the organisation determines those significant aspects it can or should control or influence. A small-step approach would evaluate whether an organisation involves the consideration of the environmental characteristics in purchasing decisions. A larger step would address the opportunities to influence suppliers, not only with a view to improving the environmental characteristics of what is purchased, but also to adopting good environmental management practices with organisations throughout the value chain.

4. More focus on environmental performance indicators

ISO14001:2015 aims to emphasise that the final goal of an EMS must be to improve the environmental performance of an organisation. The final goal of an EMS should not only be that it runs well; it must also be an actual environmental performance. This has been done by introducing the concept of environmental performance indicators. Each organisation should set performance indicators for each of its environmental objectives, and these

indicators should provide the basis of monitoring and measurement. Thus, it is not only important for an organisation to establish these objectives; it must also measure the results of these objectives (ISO14001:2015, 9.1.1). This change is not a fundamental one to the previous additions to ISO 14001, but it is an aspect which is made much more explicit in this draft. Organisations are given more concrete guidelines on how to apply the concepts of environmental performance improvement.

Each objective is now required to have one or more defined indicators connected with it, from which the performance will be evaluated. It is not specified what these indicators should consist of, thus giving a considerable amount of flexibility.

This change is derived from the recommendations of the FCSG, who argued that the objective of ISO 14001 should be the improvement of environmental performance itself, (FCSGR, p. 5-6) in contrast to the current version which implies that this improvement is achieved only by improving the EMS.

The organisation is asked in the new draft to develop a programme and determine how it will achieve its environmental objectives (ISO14001:2015, 6.2.2):

- What will be done?
- What resources will be required?
- Who will be responsible?
- How it will be integrated into the organisation's processes?
- When it will be completed?
- How the results will be evaluated?

Some of the experts interviewed expected indicators will be used for monitoring and measuring performance against specified criteria, such as discharge consent limits or energy intensity targets.

5. More focus on compliance and evaluation of performance

The requirement related to the compliance status of an organisation with respect to legal and other requirements is enhanced in the current draft. There are more detailed requirements associated with evaluating the organisation's environmental performance. This includes the incorporation of the value chain perspective on the organisation's environmental impacts and the requirements to determine the criteria against which performance is evaluated. It defines more clearly the monitoring requirement, and demands that the monitoring and measuring should be predetermined beforehand.

Evaluation compliance is extended with the requirement that the organisation should maintain knowledge and understanding of its compliance status. The organisation should be aware of its compliance status and not rely on external parties to inform it of possible noncompliance activities (ISO14001:2015, 9.1.2).

The expert who mentioned this agreed that what this means is that an organisation cannot wait for the inspection from a foreign body to check if its compliance status is good.

The FCSG emphasised that an organisation needs to assess its compliance with the environmental laws on a regular basis. Although it acknowledged the difficulty in maintaining complete compliance at all times, it is very important for an organisation to know when it is not in compliance, in order to restore compliance as soon as possible (FCSGR, p. 7). This is a pragmatic acknowledgement of the value that a well-run EMS can add to an organisation by minimising risk. This also harmonises the ISO 14001 stance with that of many jurisdictions where the commitment to compliance is seen as a pledge, rather than a guarantee of perpetual compliance.

The current draft requires the organisation to find applicable legislation and understand the compliance requirements. The draft states the need to (ISO14001:2015, 9.1.2):

• Evaluate compliance and take action if needed;

• Take any necessary action (i.e., to address noncompliance, actual or potential); and

• Maintain knowledge and understanding of its compliance status.

In the Annex, more information explains that compliance evaluation should not only include periodic compliance audits, but can also comprise of (CD1, A.9.1.2):

• Site inspections and observations;

• Review of records; and

• Comparing the results of monitoring against regulatory requirements.

6. More focus on external communication

The requirement for external communication and the quality of the data that form the basis of external communications are explained more explicitly in the new draft. The draft requires the users to evaluate the need for external as well as internal communication. The organisation also needs to specify what is looked at when making this evaluation (ISO14001:2015, 7.4). So in fact, the organisation needs a communication strategy. It needs to answer the questions of what to communicate, when to communicate, how often and to whom to communicate, and so on. There are no special requirements for external communication beyond the legal requirements or voluntary obligations (ISO14001:2015, 7.4.3). The organisation also needs to communicate information relating to potential impacts associated with the use and end-of-life of products and the delivery of services (ISO14001:2015, 8.2).

According to some of the experts interviewed, environmental communication strategy is more important than an annual report. The annual report is most often part of the general sustainability report, and many stakeholders will not be able to digest this information so easily. In its communication strategy, the organisation has to decide what is communicated, when it is communicated, how it is communicated, and to whom it is communicated—and all communication must be related to the organisation's environmental

performance. An annual report or any periodical report is only one of the many means to meaningful communication with various stakeholders.

7. More focus on Eco-design

ISO14001:2015 contains a slight shift relating to the design, development, and change of products and services. In the current version, the only mention of design is in the Annex, where it is clearly stated that this is not a requirement. However, the new draft states that "the organisation shall consider the result of the evaluation of significant environmental aspects as input in the process of the *design*, development or change of its products and services" (ISO14001:2015, 8.2). Additionally, the Annex clarifies that an organisation needs to assess how to integrate EMS requirements into various business functions such as design and development, especially product, process and facility design and development (ISO14001:2015, A.4.4).

Most of the experts did not think that this would radically affect organisations, but that this is an aspect they need to address to some degree. This is an issue that is partly related to the above-mentioned issue of value chain and there will be a need for an organisation to assess the design of the value chain concerning important environmental aspects (ISO14001:2015, A.6.1.2). How this will play out is not certain and depends largely on how the auditors decide to address the issue.

3.2 General set of Questions for the operational GAP Analysis

We have now explored the seven major categories of change that the ISO14001:2015 brings with it. In order to have a better use of these categories, and to be able to use them in a gap analysis, they will be made more concise and converted into question format. The questions of each category are obtained as a conclusion of this theoretic understanding of the gaps between the ISO14001:2004 and ISO14001:2015. Furthermore they present the framework for the operational gap analysis for the companies to assess whether they meet the requirement of the ISO14001:2015.

Strategy

1. Has the company evaluated the environmental issues with implications on the broader organisational goals—for example, climate change, raw material use, fluctuation in energy prices, and so on?
2. Has the company determined the external and internal issues that are relevant to the company's purpose and which might affect the outcome of the EMS?
3. Has the company determined who the interested parties in its environment are?
4. Has the company determined the needs and requirements from these interested parties?
5. Was the information from these interested parties used and considered when forming the EMS?
6. What was the method used in finding the interested parties?
7. What was the method used in evaluating their effect on the company?
8. What was the method used to evaluate their needs and their expectations of the organisation?
9. What was done with all of this information?
10. When forming the scope of the EMS, did the company first assess and take into account the internal and external issues relevant to the EMS (question 2) and the needs and expectations of the interested parties (question 6 to 9)?
11. Did the scope of the EMS include the assessment of the value chain? If so, what part of the value chain can the company influence and control and should thus be included under its scope?
12. Is the scope of the EMS available in a documented form?

13. When planning for the EMS, has the company used the information from question 2 and questions 6 to 9 to determine the risk and opportunities to the EMS that stem from:
a. Significant environmental aspects?
b. Legal requirements and voluntary obligations?
c. Other business risks and opportunities that affect the EMS and need to be addressed?
14. Does the company have plans to address these risks and opportunities, integrate them into its EMS, and evaluate the effects of the plan?

Leadership

1. Does the organisation's top management understand the organisation and its context (questions 1 and 2 from the strategy part)?
2. Does the top management give consideration to environmental performance in the general strategic planning of the company?
3. Is the environmental policy appropriate to the general purpose and context of the organisation (questions 1 and 2 from the strategy part)?
4. Does the environmental policy have commitment to support the environmental protection specific to the context of the company, such as sustainable resource use, climate change mitigation and adaptation, and protection of biodiversity and ecosystems, and other relevant environmental issues?
5. Has the company evaluated the appropriateness of the availability of the environmental policy (EP) for each interested party?

Environmental aspects and value chain

1. Has the company mapped the value chain?
2. Has the company evaluated what processes and products in the value chain have substantial environmental impact?
3. How are they evaluated?
4. Has the company evaluated the control and influence that it has in the value chain?
5. What has the company done to have influence in its value chain?
6. Has the company established criteria for evaluating the supply of goods, services, and outsourced processes, and does it take a life cycle perspective in the process?

7. Has the company implemented the above-identified criteria?

8. Has the company identified specific environmental requirements that it deems appropriate for the procurement of goods and services or outsourced processes?
9. Has the company communicated these requirements to its suppliers and others who need to know of them, including its contractors?

Environmental performance indicators

1. Has the company set performance indicators for each of its environmental objectives, ideally, in a monitored and measurable way?
2. Has the company considered the use of ISO 14031 as a guide for these performance indicators?

Evaluation

1. Has the company added the value chain perspective when evaluating its environmental impact?
2. Has the company determined the criteria against which the environmental performance is evaluated?
3. Does the company maintain knowledge and understanding of its compliance status?

Communication

1. Has the company developed a communication strategy—that is, has it determined the need for internal and external communication? This strategy needs to include answers to the following questions:
a. What will be communicated?
b. When to communicate?
c. With whom to communicate?
d. How to communicate—methods, tools and approaches?
2. What is the basis of this evaluation?
3. Has the company evaluated the communication requirements from each interested party?
4. Has the company evaluated the need to communicate information relating to potential impacts associated with use and end-of-life of its products and the delivery of its services?

Environmental design

1. Has the company taken into account significant environmental aspects in its design and development process?
2. Has the company assessed the opportunities for integrating the EMS with the design process, in order to manage the environmental aspects that have significant impacts?

3.3 Key concepts to keep in mind for obtaining a good GAP Analysis

Context of the Organisation

This is a new requirement to identify the internal and external factors and conditions that affect an organisation. Examples of internal issues could include an organisation's culture and capabilities, whilst external issues could include the effects of climate change, flooding and the availability of natural resources to name but a few. The organisation needs to identify the stakeholders of its EMS and any requirements they have.

Tip: The context will influence the type and complexity of management system needed.

Leadership

There is an explicit and enhanced requirement for top management to demonstrate leadership and engage directly with the system. This is an enhanced requirement relating to top management.

Tip: Top management will need to take accountability for the effectiveness of the EMS and provide support and resources as necessary.

Strategic Environmental Management

Top management needs to ensure that the environmental policy and environmental objectives are consistent with the overall business strategy, and that management review outputs include any implications for the strategic direction of the organisation.

Tip: This will be new territory for ISO 14001 audits and in conjunction with the above, more audit time is expected to be devoted to discussions with the organisation's leaders.

Risk Associated with Threats and Opportunities

This is a new concept introduced in the 'planning' section of the standard. It requires the organisation to identify the effect of uncertainty ("risk") associated with its threats and opportunities and take action to address them.

Tip: Threats and opportunities can include the negative or positive impacts associated with environmental aspects or compliance obligations (previously known as legal or other requirements).

Life-cycle Perspective

The identification of aspects and impacts should now be done whilst considering a life cycle perspective, i.e. from raw material acquisition, or generation from natural resources to end-of-life treatment. A life cycle perspective should also be taken when establishing value chain controls (see below).

Tip: A life-cycle perspective does not require a detailed life cycle assessment; a simple consideration of the life cycle stages which can be controlled or influenced would be sufficient.

Value Chain Control and Influence

Environmental requirements need to be established and considered throughout the procurement and design activities of the organisation's products and services.

Tip: Design processes would include development, delivery, use and end-of-life treatment.

Performance evaluation

There is a new emphasis on the need for evaluation in addition to the current requirements for measurement and analysis.

Tip: Evaluation is the interpretation of results and analysis. This is not new to managers but is made explicit in the standard for the first time. Processes may be well defined and effective, but do they yield optimum results? This may be a new challenge for internal audits.

3.4 Final summary of the changes with their explanations for implementation

Context of the organisation

4.1 (NEW REQUIREMENT) This new concept relates to the factors and conditions affecting organisational operation e.g. regulation, governance and environmental conditions.

4.2 (NEW REQUIREMENT) Environmental conditions are the elements of the environment which can be affected by the organisation (air quality, water quality, land use, etc.), or those which can affect the organisation (climate change, existing land contamination, etc.). Consideration should be given to who the interested parties might be and what their relevant interests might be, e.g. employees, neighbours, customers, shareholders, board members, competitors, regulators, etc.

4.3 (4.1 ISO14001:2004) The needs and expectations of interested parties can become compliance obligations. It is no longer permissible to exclude activities, products and services from the scope of the environmental management system which can have significant environmental aspects.

4.4 (4.1 ISO14001:2004) Consideration needs to be given to a number of specified factors when establishing the scope of the EMS. The scope now needs to be available to interested parties. Consideration needs to be given to the knowledge referenced in clause 4.1 on the context of the organisation when establishing and maintaining the environmental management system.

Leadership

5.1(NEW REQUIREMENT) Top management of the organisation are now required to demonstrate leadership and commitment to the EMS in a number of specified ways.

5.2(4.2 ISO14001:2004) The policy commitment to the prevention of pollution has been replaced by the need for an overarching policy commitment to the protection of the environment. This is to include the prevention of pollution and other issues (such as sustainable resource use, climate change mitigation and adaption, etc.).

5.3(4.4.1 ISO14001:2004) There is no longer a need for a management representative(s), however the roles, responsibilities and authorities previously assigned to them still need to be assigned within the organisation.

Planning

6.1.1 (NEW REQUIREMENT) Consideration needs to be given to identified internal and external issues (4.1) and the needs and expectations of interested parties (4.2).

6.1.2 (4.3.1 ISO14001:2004) The identification of aspects and impacts now needs to consider a life cycle perspective. It has now been made explicit that this shall also take into account abnormal and emergency situations.

6.1.3 (4.3.2 ISO14001:2004) 'Compliance obligations' is the new term for 'legal and other' requirements – this gives equal weighting to non-legislative mandatory obligations and voluntary obligations as legal requirements. Documented information on compliance obligations must be maintained.

6.1.4 (NEW REQUIREMENT) This is a new concept which requires the identification of the risk (defined as the effect of uncertainty on objectives) associated with threats and opportunities that need to be addressed, whilst maintaining documented information on these.

6.1.5 (NEW REQUIREMENT) The organisation needs to plan to take actions to address risk associated with threats and opportunities, significant environmental aspects, and compliance obligations.

6.2.1 (4.3.3 ISO14001:2015) The term 'targets' is no longer used, however the requirements for what would be known as targets are included in clause 6.2.2.

When setting objectives consideration now needs to be given to the risk associated with threats and opportunities.

The standard no longer includes a specific need to consider the views of interested parties when establishing objectives and targets, however these will still be covered if any compliance obligations (which do still need to be considered) have been set based on the needs and expectations of these interested parties.

There are now specific requirements for the objectives to be monitored, communicated and updated as appropriate.

6.2.2 (4.3.3 ISO14001:2004) The term 'programme' is no longer used and the standard talks about planning how to achieve environmental objectives instead. This planning now needs to include details on what resources will be required and how the results will be achieved.

Support

7.1 (4.4.1 ISO 14001:2004) No significant change.

7.2 (4.4.2 ISO 14001:2004) Persons now need to be competent if they can affect the organisation's environmental performance, rather than if they have the potential to cause a significant environmental impact. The need for training has been expanded into a wider need for taking actions to acquire necessary competences, which can also include mentoring, re-assignment or hiring / contracting activities.

7.3 (4.4.2 ISO 14001:2004) This section has been rewritten, however the requirements are largely the same.

7.4.1 (4.4.3 ISO 14001:2004) Requirements are now more prescriptive as to what the process for communications (internal and external) shall be.

New requirements include the need to ensure that it is planned what, when, how and with whom communications are made, and that the communications take into account compliance obligations, are consistent with the EMS and are reliable. Communications on the EMS must be responded to.

7.4.2 (4.4.3 ISO 14001:2004)The communications process must enable persons working on the organisation's behalf to contribute to continual improvement.

7.4.2 (4.4.3 ISO 14001:2004) The previous requirement on deciding whether to communicate externally about significant environmental aspects is no longer specific referenced, as this is covered in the overall communications process detailed in 7.4.1.

7.5.1 (4.4.3 ISO 14001:2004) The terms 'documents' and 'records' have been replaced by the term 'documented information'.

7.5.2 (4.4.5 ISO 14001:2004) Specific reference is now made to the need for ensuring appropriate format and media.

7.5.3 (4.4.5 ISO 14001:2004) Controls now need to ensure that documented information is adequately protected. The document control activities to be addressed by the system are specified.

Operation

8.1 (4.4.6 ISO 14001:2004) Specific reference is now made to the planning of operations, as well as their control. Controls for processes should now be implemented to prevent deviation from compliance obligations, as well as from the policy and objectives.

There are requirements for the control of planned changes and the review of unintended changes. It is now specified that outsourced processes are controlled or influenced. There are now requirements for determining procurement activities and considering requirements in design activities, taking into account a life cycle perspective.

8.2 (4.4.7 ISO 14001:2004) There is now a specific requirement to prevent the occurrence of emergency situations and accidents. The review and revision of the procedure should now also take place in particular after tests.

Performance Evaluation and Improvement

9.1.1 (4.5.1 ISO 14001: 2004) Greater detail on requirements for monitoring and measurement activities is specified. There is a specific requirement for the evaluation of performance and the use of indicators.

9.3 (4.6 ISO 14001: 2004) Changes in risk associated with threats and opportunities need to be considered during the management review process.

The consideration of the organisation's environmental performance now needs to include trends in nonconformities and corrective actions, monitoring and measurement results, conformity with compliance obligations and audit results.

Review is required of opportunities for continual improvement, rather than recommendations for improvement.

The outputs of the management review shall include any implications for the organisation's strategic direction.

10.1 (4.5.3 ISO14001:2004) The specific requirement for preventive action has been removed – the entire management system should be a tool for preventive action.

Actions to prevent recurrence of nonconformities shall specifically include a determination of whether similar nonconformities exist or could potentially occur.

10.2 (NEW REQUIREMENT) The EMS needs to be continually improved in order to enhance environmental performance.

4. Conclusion

Environmental management can be defined as the response of the corporations to environmental concerns brought by their business. ISO 14001 is by far the most commonly used standard for third-party certification of Environmental Management Systems (EMS) in the world. Due to its popularity, the latest update will potentially affect the corporate environmental management world considerably.

The goal of this work was to identify the gaps between ISO14001:2004 and the new ISO14001:2015 and further provide a base for companies to do their operational gap analysis on the change.

Seven groups of likely changes were identified: strategy, leadership, environmental aspects and the value chain, environmental performance indicators, evaluation, communication and environmental design.

The greatest changes to the ISO14001:2004 version were found in the first two groups, especially in the first one, regarding strategy. With these changes, it is no longer sufficient for companies to have an EMS on an operational level, it is now essential to have it on the strategic level as well. This will be a major change of approach towards environmental issues for most companies.

The other five groups enhance the previous requirements of ISO 14001:2004. Even the addition regarding the value chain, that will most likely prove to be a great change for most companies, is really just an extension of evaluating the environmental aspects.

The greatest change of the new update is the increased importance of environmental management on the strategic level of companies, which was up to now only commonly run as a separate contained managerial system with limited effect on other parts of the company. This can be seen as a further step of including the environment just in business planning but also in the business strategy. This new ISO14001:2015 has definitely moved ISO14001 as a tool that is used just for controlling of environmental impacts bust as well of preventing of potential negative impacts and thus further contributing to future sustainable civilisation.

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