

CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

FACULTY OF ECONOMICS AND MANAGEMENT

**REVISION AND IMPROVEMENT OF THE ENVIRONMENTAL
MANAGEMENT SYSTEM ACCORDING TO ISO 14001 IN A COMPANY -
CASE STUDY**

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Declaration

I hereby declare that I have worked on my Diploma Thesis titled “Revision and improvement of Environmental Management System according to ISO 14001 in a company - case study” solely and completely on my own and that I have marked all quotations in the text. The bibliography and other sources I have used are mentioned in the References Section of the Thesis.

Prague, 10th April 2009

.....

Signature of the student

Acknowledgement

I would like to express my sincere thanks to my supervisor Ing. Richard Selby for his advice, recommendations, and overall help with my thesis. I would also like to thank Ing. Lenka Hajšlová from NeXA, s.r.o. for her valuable practical advice.

**REVISION AND IMPROVEMENT OF THE ENVIRONMENTAL
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CASE STUDY**

**REVIZE A ZLEPŠENÍ SYSTÉMU ENVIRONMENTÁLNÍHO
MANAGEMENTU PODLE ISO 14001 VE VYBRANÉM PODNIKU –
PŘÍPADOVÁ STUDIE**

SUMMARY

The thesis aims to propose an improvement of the existing EMS in a company on the basis of the study of the Czech environmental legal frame, ISO 14001 standard, and theoretical findings about EMS from quoted resources. The theoretical part is followed by a case study outlining and analyzing the opportunities in which the existing organizational EMS could be enhanced by establishing an improvement programme and environmental performance evaluation. An essential part of the thesis is evaluation of practical functioning of the EMS and analysis of activities leading to improvement of the EMS as well as the organizational environmental performance. In the analysis, measurable environmental goals and targets are set, and they are supplemented by detailed financial calculations. The proposed improvement programme deals with five main activities: 1. reduction of plastic waste by installing a water filter, 2. use of public transport within the city, 3. emphasis on more precise waste sorting, 4. environmental education and training, and 5. linking up the EMS with the Corporate Social Responsibility concept. It is apparent that the proposed targets can not be achieved immediately in full; however the organization committed itself to “continual improvement”. A prerequisite of success of all proposed activities is their mutual consensus and communication at all management levels.

KEY WORDS: Environmental Management System, Continual improvement, Environmental Performance Evaluation, Case study, Corporate Social Responsibility

SOUHRN

Cílem diplomové práce je navrhnout zlepšení EMS ve vybrané společnosti na základě studie právních požadavků – legislativního rámce v oblasti životního prostředí, normy ISO 14001, a teoretických poznatků o EMS z citované literatury. Na teoretickou část navazuje případová studie, která analyzuje konkrétní aktivity vedoucí ke zlepšení EMS pomocí “hodnocení environmentálního profilu” organizace. Součástí práce je hodnocení praktického fungování EMS a analýza opatření vedoucích ke zlepšení EMS a celkového environmentálního profilu organizace. V práci jsou navrženy měřitelné cíle a programy vedoucí ke zvýšení environmentální výkonnosti organizace. V analýze EMS v organizaci je zohledněna ekonomická stránka environmentálního opatření, je doplněna podrobnými finančními kalkulacemi. Výchozí návrh zlepšení řeší pět hlavních aktivit: 1. snížení produkce plastů pomocí instalace filtru, 2. doprava: upřednostňování MHD pro jízdu po Praze oproti jízdě auty, 3. důraz na pečlivé třídění odpadu, 4. environmentální výchova a osvěta, 5. zahrnutí EMS do koncepce CSR (Společenská odpovědnost firem). Je zřejmé, že cílové hodnoty nemohou být dosaženy najednou a hned, ale organizace se zavázala k postupnému zlepšování. Předpokladem úspěchu navržených opatření je jejich vzájemný konsenzus a komunikace na všech úrovních vedení.

KLÍČOVÁ SLOVA: Systém environmentálního managementu, neustálé zlepšování, hodnocení environmentálního profilu, případová studie, Společenská odpovědnost firem

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1 Introduction

Environmental pollution is changing the life on our planet more and more. More significantly it became apparent during the industrial revolution, especially after the World War 2. To solve problems with environmental pollution, developed countries gradually started to take necessary actions to mitigate negative environmental impacts. One of the important tools to improve environmental performance of companies is Environmental Management System (EMS), which is based on prevention of possible environmental pollution connected to particular company activities.

Since the 1950's, it started to be obvious that people need to handle the environmental protection to precede its complete devastation. That is why various actions have been taken in order to protect the environment as public good, especially by regulation of subjects, whose activities may harm the environment. Environmental pollution started to be dealt with by means of strategies of regulation (direct and indirect) as well as strategy of prevention.

The topic of environmental protection now enjoys public attention more than ever before. Some extreme attitudes say that in case of environment and environmental protection we can speak about topic politization and medialization. As usual, it brings both; positive and negative effects. One of negative effects can be the fact that the topic is often misused to enforce particular political interests without regard to environment itself and therefore it is used to cover up the real reasons behind the particular political decision making. Nevertheless, the processes brought about also positive aspects: the topic of environment entered into the public discussion, which is very important for people to start thinking about what they are doing and what could be done better with regards to environment. Nowadays, obvious expected practice when realizing any kind of project is that the project must be evaluated not only from the economic point of view, but also with regards to the environmental protection, as EIA – Environmental Impact Assessment.

Connecting business with environment is becoming one of the greatest tasks, nowadays. Even when environmental aspects are in obvious contradiction with economic goals, they need to be taken into account as an equal point of view. Companies which want to survive in hard conditions of quickly changing market environment have to be innovative, i. e. effectively identify their competitive capabilities and turn them into competitive advantages. Consumers' needs are changing as well and their behaviour on the market reflects the situation and moods in the society. Nowadays, companies are being more and more pressed to reduce negative impacts of their activities, products, services on the environment. The pressure comes from the side of the state in the form of legal requirements, the people in the form of public opinion, and more and more also from the side of the market in the form of customers, suppliers and competitors. Especially, export-oriented producers are obliged to face this reality. In the sense of global responsibility, consumer begins to ask, under which conditions a given product had been made, whether producers used materials and procedures that are not harmful to the environment and employees' health, how can be the product and package disposed of after using.

Our economy does not operate separately; we are members of the European Union, which is one of the main supranational leaders in the field of environmental protection and proclamation of sustainable development. Herewith, we need to take into account that our local acts have global impacts.

“Green approach” started to penetrate also into the Czech Republic. There is a number of non-governmental organizations that point the attention to environment pollution, renewable resources, waste management and many other before neglected issues.

This paper is focused on environmental protection activities of economic subjects, thus it examines the phenomenon from the microeconomic perspective. In other words, it strives to find answers to questions of the practical functioning of EMS and how a company can contribute to environmental protection.

2 Thesis' Objectives and Methodology

The thesis aims to revise the current EMS in a selected company in order to improve the system and optimize it with regards to the company needs and current environmental legal frame.

The theoretical part deals with EMS importance, world ISO statistics, and continual improvement and it is followed by a case study outlining and analyzing the opportunities in which existing organizational environmental management system could be enhanced by establishing an improvement programme and environmental performance evaluation. The thesis' outcome comes up with recommendations which would lead to EMS improvement. The company will be proposed to address new environmental aspects and these should be tracked in existing EMS documentation and submitted to management review. New environmental aspects, environmental goals and targets will be proposed in order to enable significant environmental aspects to be controlled more precisely. An organization must take into account the importance of environmental education and training as well as efficient communication throughout the whole organization.

Hypothesis

The hypothesis of the thesis is: the revision of the existing EMS and proposed improvement programme will help the company mitigate their negative impact on the environment and improve overall environmental performance.

Methodology

Literature Overview which begins in the following chapter discusses the importance of EMS from various perspectives. EMS world statistics are included in order to analyse why some countries are keen on the EMS, examining current ISO 14001 certification numbers and their possible causes. In the following subchapter the thesis deals with Quality Management System (QMS), both EMS and QMS integration and process optimization. The EMS is then put in the context of interrelations with the concept of Business Ethics and Corporate Social Responsibility (CSR).

Chapter 4 *Case study* reflects all relevant information found out during diploma internship. The company NeXA, s. r. o. (NeXA, Ltd.) is introduced, and then current functioning of existing EMS is precisely examined. The company incentives to adopt the ISO standards are examined.

Chapter 5 *Revision and analysis* deals with the assessment of present functioning and development of EMS in NeXA with the improvement carried out since March 2007. Inspired by the theoretical background of managerial systems, measurable goals and targets will be set, therefore significant environmental aspects can be monitored and evaluated with the help of Environmental Performance Evaluation in the following chapter. Several EMS improvement opportunities are identified and each issue appropriately analysed and evaluated while considering not only the environmental dimension but also the economic dimension.

Chapter 6 *Recommendations* summarizes EMS improvement opportunities and draws important strategic findings which need to be considered for successful realization of the EMS improvement. Corporate Social Responsibility actions carried out by the company refer to CSR analyzed generally in the theoretical part.

3 Literature overview

3.1 Importance of Environmental Management

Environmental management represents a special field of management dealing with natural environment, *“it is rather the management of interaction by the modern human societies with their impact on the environment”* (Environmental Management, 2009) Environmental management involves the management of all components of the bio-physical environment, both living (biotic) and non-living (abiotic). This is due to the interconnected nature and network of relationships among all living species and their habitats. The environment also involves the interrelations within the human environment, such as between the social, cultural and economic environment and the bio-physical environment.

“Strategies of direct regulation forced enterprises to substantial investments in end of pipe technologies (cleaner production technologies) by means of normative tools, i. e. limits, directions, restrictions, standards, etc. Enterprises, which were forced to fulfil various limits and directions, do not behave actively and are not stimulated to go beyond the directions in positive manner.” (Mišák, 2002)

Their aim is to avoid possible sanctions, therefore they tend to fulfil only the necessary requirements, furthermore in some cases tend to violate them. Subsequent control requires extensive administrative agenda, which in fact can give exceptions.

3.1.1 Environmental management system

Environmental management system is regarded as a complex of tools, which are implemented in a company in order to minimize negative impact of activities on the environment. By help of EMS, company can significantly reduce environmental impact measured by some objective criteria. According to Bansal and Hunter (2003, p. 290) *“An EMS is a set of management processes that requires firms to identify, measure, and control their environmental impacts. Without external certification,*

firms could indicate that they had adopted an EMS, but not follow through on those activities.” From above, it is obvious that firms can adopt and carry out EMS connected activities without seeking compliance with norms, and without certification. ISO Survey (2007) outlines that many users decide to have their management systems independently audited and certified as conforming to the standards. Certification is not a requirement of the standards themselves, which can be implemented without certification for the benefits that they help user organizations to achieve for themselves and for their customers. *“Nevertheless, many thousands of organizations have chosen certification because of the perception that an independent confirmation of conformity adds value.”* (ISO Survey, 2007)

3.1.2 Types of EMS standards

There is a number of standards that explain how to employ EMS. The ISO 14001 standard is the most widely used standard for environmental risk management and the European Eco Management & Audit Scheme (EMAS) created and widely used in the EU is closely aligned to ISO 14001 features. As a common auditing standard, the ISO 19011 standard explains how to combine this with quality management. The UK has developed a phased standard (BS8555) that can help smaller companies move to ISO 14001 in six manageable steps.

ISO 14001 is an international standard for environmental management systems (EMS). Since its introduction in 1996, ISO 14001 has become well-known all round the world and many firms operating in various industries have adopted the ISO 14001 EMS standards. The overall world number of ISO 14001 certificates increases every year globally. Some countries are highly keen on EMS for the purpose of gaining competitive advantage. This phenomenon will be more analyzed in a subchapter concerning recent EMS statistics.

3.1.3 EMS according to ISO 14001

The international standard defines EMS as a part of an organization's management system used to develop and implement its environmental policy and manage its environmental aspects. (EMS Requirements, 2005, pp. 12) *“International standard ISO 14001 specifies requirements for the environmental management systems to enable an organization to develop and implement a policy and objectives which take into account legal requirements and information about significant environmental aspects.”* (EMS Requirements, 2005, pp. 8)

The standard is intended to apply to a wide range of economic subjects. In fact, any subject wanting to implement EMS, can do so with the help of ISO 14001. An overall aim of this International Standard is to support environmental protection and prevention of pollution in balance with social-economic needs.

Although decision about EMS implementation is done on a voluntary basis, ISO 14001 imposes fulfilment of legal and other requirements for a particular country. Achieving the accordance with valid legislation is an integral part of EMS. However, an organization must comply with the law regardless of the fact if it had or not had adopted EMS. The EMS helps to eliminate risks of financial sanctions, loss of image etc. *“The success of the system depends on commitment from all levels and functions of the organization, and especially from top management.”* (EMS Requirements, 2005, pp. 8)

Environmental management system shares common principles with the quality management system (ISO 9001) as well as with other standards by ISO, and it is possible to implement it to all fields of business, production and services.

The EMS brings about more efficiency and transparency into all company activities as well as negative impacts on environment reduction.

Once the firm gets the ISO 14001 certificate, it is valid for 3 years. After that period the firm can apply for recertification. In the validity period, the EMS is annually controlled by an independent auditor, who approves that the system fulfils all legal requirements and other obligations and also the firm should show evidence of the EMS' "continual improvement". All the above mentioned aspects are examined by

“supervisory audits”. If everything goes right, the firm is entitled to show compliance with the standard ISO 14001 by certificate until the next supervisory audit.

3.1.4 EMS in the Czech Republic

In the Czech Republic, there is large evidence of success of EMS adoption. A possible contribution to this situation can be seen in the governmental support of the green approach. (Management environmentu, 2008) Very often, there is for example a requirement, which establishes that subjects who want to participate in public competitions and selection procedures have to fulfil a condition of having implemented quality management system (according to ISO 9001) which is the qualification presumption and the submitter can also add other requirements among which the most common is EMS according to ISO 14001. In the case of companies operating in construction, common practise is to require also OHSAS 18001 – Occupational Health and Safety Standard. In the case of information security, selection procedure organizer also requires Information Security Standard ISO 27001.

The 1990’s were characterised by massive application of quality management ISO standards; in the second half of the 90’s EMS came into public. (Management environmentu, 2008)

Firms go further and implement „The integrated management system” which merges EMS, OHSAS, and/or the QMS requirements together into one management system. Significant similarities and overlaps between these systems facilitate integration. An integrated management system enables requirements to be assimilated, delivers a consistent message, and unites redundant processes.

3.1.5 International Organization for Standardization (ISO)

International Organization for Standardization was established as a NGO in Geneva, Switzerland in 1947. Since that time it has introduced many voluntary technical standards which serve to production development and supply of goods and services. In case of ISO 14001, first introduced in 1996, it created a standard and guidance

document to help organizations address their environmental issues. The ISO 14000 is a family of standards that includes EMS, environmental auditing, environmental labelling, performance evaluation, and life-cycle assessment.

ISO is the world's largest developer of voluntary International Standards for business, government and society. *"Its portfolio in September 2008 comprised more than 17 400 standards that provide practical solutions and achieve benefits for almost every sector of economic activity and technology."* (ISO Survey, 2007)

Of these, ISO 9001:2000 and ISO 14001:2004, which give the requirements for quality management and environmental management systems, are among ISO's most well known and widely implemented standards ever. They are used worldwide by businesses and organizations, large and small, in public and private sectors, by manufacturers and service providers, in all sectors of activity.

3.2 Recent ISO Statistics

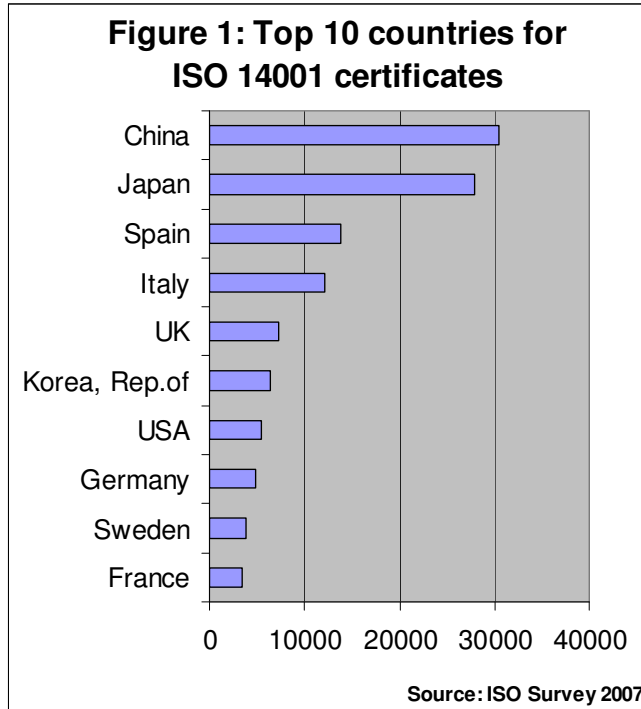
From the statistic analysis of ISO certification number is important to understand whole philosophy behind EMS as well as the practical perception of ISO 14001, in other words how EMS are seen by the firms in different countries with different cultural, political, economic backgrounds. The recent ISO statistics show the reality, not gathered data gained in Survey of preference, but real numbers, which states what the firm really do, how they act, which is often more important than what they think or say.

3.2.1 Worldwide popularity of ISO 14001 and its causes

When analysing and interpreting data about numbers of organizations having a valid ISO 14001 certificate, we have to take into account that the validity of every issued certificate expires 3 years after certification and then if the organization still wants to show that it is ISO 14001 compliant, the EMS needs to be recertified.

In case of some emerging economies, as China and countries of southeast Asia as well as in case of new EU member states we can observe increasing significance of foreign trade that is why these countries increase their numbers of ISO 14001 certificates. Question remains, to what extend this fact can proof their development.

When analyzing the top 10 countries for ISO 14001 certificates in 2007, there is no surprise that ISO 14001 somehow corresponds with the level of development, because top 10 countries are, with some exceptions, the most economically developed countries. The very fact that they are concerned with the environment shows to some extent of development. However there is one



substantial exception. China is on the highest position, having 30 489 certified subjects in December 2007. This is a very controversial piece of information, when we admit that China also belongs to the world’s biggest environment polluters and can not be marked as a country which strives to preserve its environment and natural resources for next generations, neither encourages its economic activities to be more environmentally friendly. However, according to EPA (EPA, 2008) “*China has been working with great determination in recent years to develop, implement, and enforce a solid environmental law framework. Chinese officials face critical challenges in effectively implementing the laws, clarifying the roles of their national and provincial governments, and strengthening the operation of their legal system*”. Last notion sends signal that China is going to reevaluate its reckless approach towards the environment and in years to come we can expect substantial improvement. The huge increase in ISO 14001 is maybe the first sign.

When analysing the reason why these countries appeared among the top ten countries in terms of the number of certificates, we need to take into account the size as well as

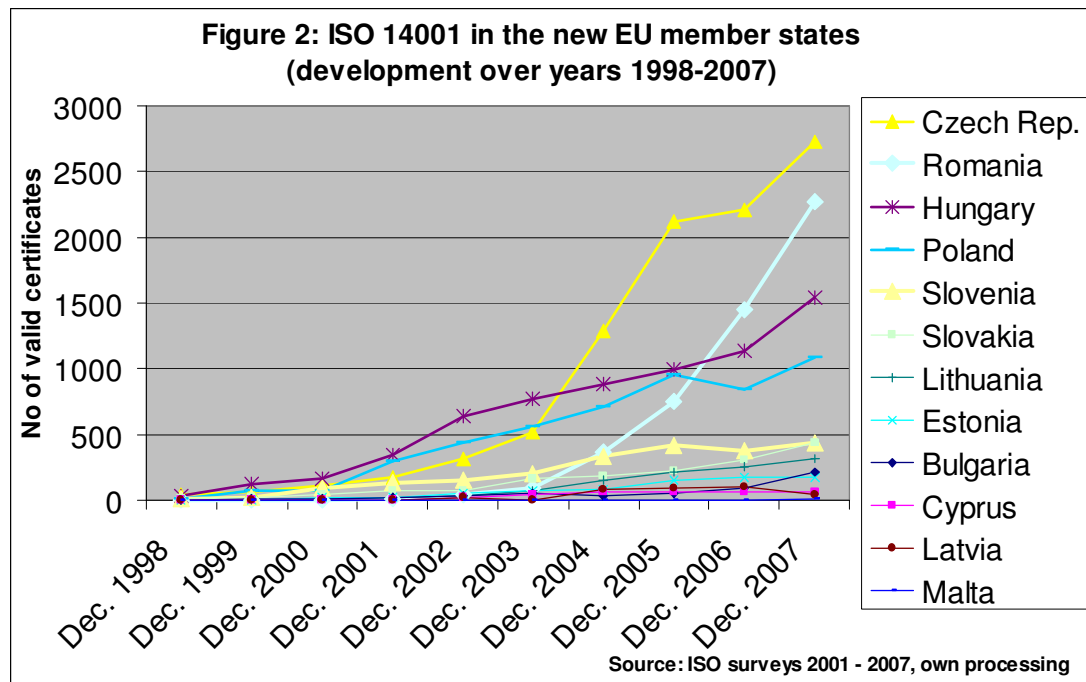
population of each country in order to estimate the number of subjects operating in the economy. Japan can be considered the world leader in terms of number of certificates related to land size and population number. For instance, current UK population is 61 million that is almost half of the population of Japan (over 127 million). The UK having 244 820 square metres of land area compared to Japan occupying 377 835 square metres. The UK land represents about two thirds of Japanese land size, but Japan still is in a disproportional lead, having 3.8 times more certificates. Previous results in conclusion that Japanese organizations are extremely keen on ISO 14001 certification.

From above, several points can be concluded; as we can see from the figure 1 above, the countries seek better care for the environment in the ISO 14001 certification, but only partially, the other incentives are to be recognized among their competitors and gain competitive advantage.

Above conclusion can seem to be the proof that EMS have been possibly partially misunderstood, because at the very beginning there was the idea of protecting the environment in a sense of minimizing the pollution from economic activities of enterprises. Nevertheless, there is a substantial difference between EMS implemented in a company operating in China (where solid environmental protecting law is only now being created and adopted) and comparable company operating somewhere else, for instance in Europe (where the law protecting environment is generally very strict). The basis of EMS stands on legal and other requirements; therefore they can not be the same, as long as the law protecting the environment varies across the countries and continents. It has already been mentioned that EMS is not only about legal requirements, but they occupy a substantial part. That is why ISO 14001 does not guarantee that the product was produced entirely in an environmentally friendly way; it guarantees only that the production was compliant with current law of a certain country. The ISO 14001 itself admits fact that *“two organizations carrying out similar operations but having different environmental*

performance can both conform to its requirements.” (EMS Requirements, 2005, pp. 10)

In the graph below we can see the ISO 14001 certificates given to countries of “New Europe” – new EU member states, which enlarged the EU in years 2004 and 2007. The time series deals with the period over the years 1998 – 2007. The data are annually reported by the International Organization for Standardization.



The figure 2 shows that the Czech Republic’s score (2731 certificates) is the highest among the new EU member states. The Czech Republic is then followed by Romania and Hungary. The 1st position on the ISO 14001 scale witnesses that the Czech Republic is real leader among other countries stigmatized by the same political and economical forces in past. However, the Czech Republic can poorly compete for example with Spain (13 852), Germany (4 877), or France (3 476).

3.2.2 Integration of EMS (ISO 14001) with Quality management system (ISO 9001)

It is worth outlining the importance of QMS, since EMS is rarely implemented only by itself. Obviously EMSs are adopted together or on the basis of QMS. The significant environmental aspects are easily identified in business and operational activities, which had already been documented. In other words, when an organization has already adopted ISO 9001, this is the best implicit condition for EMS implementation, since a large part of the structure of requirements is similar and we can build on the process documentation by means of analyzing the processes from EMS's point of view.

Quality management system helps an organization to deal systematically with processes and their effects in time, to measure and evaluate them and consequently adjust them to meet assigned goals and targets. In the Czech Republic, standard ISO 9001 does not impose on a company to fulfil legal requirements, but it is more about understanding the firm as such. In the first stage, the best method is to forget the guidelines and requirement, and try to think about the organization as such, to understand its processes, procedures, methods, etc.

With the method such as monitoring and evaluating of processes, we consequently get important data describing how intensive the production is, the data needs to be analyzed and with the help of competent employees, the processes are subsequently documented.

Process documentation is a substantial part of ISO 9001 implementation, because it enables to transform individual knowledge and experiences into organizational experience shared by all employees, i. e. those who left, those who remain, and those who will enter the firm in future. Therefore the documentation of the processes helps to overcome time dimension and negatives of employees' fluctuation.

The whole system of quality needs to be maintained, revised and continually improved to fit organizational needs in the best way.

3.3 Implementation process

Implementation of Environmental Management System preceded by a review of company cultural values, especially those aligned towards environmental issues. Therefore EMS implementation is a practical realization of organizational values closely linked to change of attitudes of managers and employees. The process can be extremely successful only when there is some inner conviction that this activity is needed. The company concerned should integrate environmental aspects into the corporate strategy and current operation. Furthermore, company gives commitment to continual improvement and pollution prevention.

When a company decides for EMS implementation, it usually follows a certain pattern of activities, processes, and decisions. After identifying EMS implementation as an objective, benefit-cost analysis and decision of EMS implementation follows also the selection of an appropriate consultation and certification body. Consultation and certification bodies have to be separate to ensure the highest possible objectivity and to prevent possible clashes of interests.

Bansal and Hunter (2003, p. 290) outline six steps that must be followed in order to comply with the ISO 14001 standard:

- Develop an environmental policy,
- Identify the firm's activities, products and services that interact with the environment,
- Identify legislative/regulatory requirements,
- Identify the firm's priorities and set objectives and targets for reducing its environmental impacts,
- Adjust the firm's organizational structure to meet those objectives, such as assigning responsibility, training, communicating and documenting,
- Check and correct the environmental management system.

3.4 Continual improvement

Once the system is implemented, it should be continually revised, updated and improved. As mentioned before, it is a long-term continuous process which is basically never completed, since no system is perfect. Interconnection with management of change is apparent, as the organization needs to modify and adjust its goals in order to respond to changing environment.

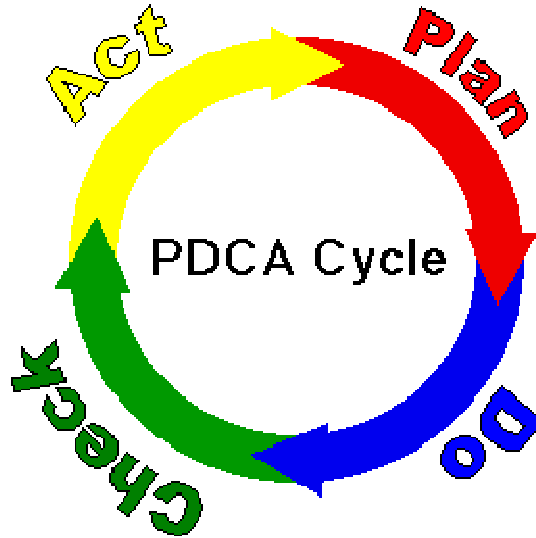
ISO 14001 defines Continual improvement as a *“recurring process of enhancing the environmental recurring process of enhancing the EMS in order to achieve improvements in overall environmental performance consistent with the organization’s environmental policy”* (EMS Requirements, 2005, pp. 12).

Continual improvement can be explained by means of Deming cycle – PCCA model. *“Many organizations manage their operations via the application of a system of processes and their interactions, which can be referred to as the “process approach”. ISO 9001 promotes the use of the process approach. Since PDCA can be applied to all processes, the two methodologies are considered to be compatible.”* (EMS Requirements, 2005, pp. 10)

3.4.1 Deming cycle – PDCA model

“The PDCA (or PDSA) Cycle was originally conceived by Walter Shewhart in 1930’s, and later adopted by W. Edwards Deming” (Improvement Tools, 2008). The model provides a framework for the improvement of a process or system. It can be used to guide the entire improvement project, or to develop specific projects once target improvement areas have been identified. PDCA concept has many implications, for instance to personal development, since there is no perfect system, which can not be further improved.

Figure 3: Deming cycle – PDCA model



Source: Improvement Tools, 2008

The PDCA cycle is designed to be used as a dynamic model. The completion of one turn of the cycle flows into the beginning of the next. “*Following in the spirit of continuous quality improvement, the process can always be reanalyzed and a new test of change can begin.*” (Improvement Tools, 2008) This continual cycle of change is represented in the **ramp of improvement** on Figure 5 below. Using what we learn in one PDCA trial, we can begin another, more complex trial.

In the phase of *Planning* – we take actions aimed at improvement.

We analyze what we intend to improve, looking for areas that hold opportunities for change. The first step is to choose areas that offer the most return for the effort.

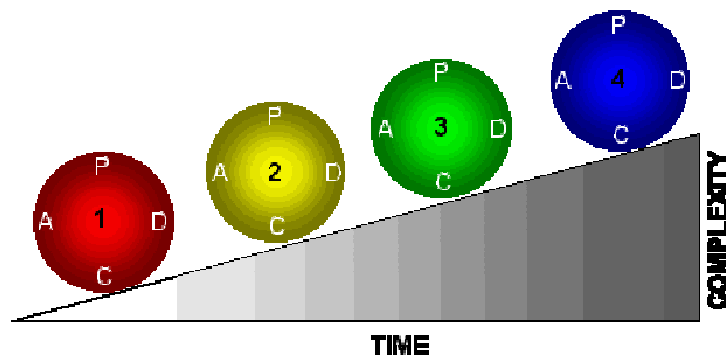
In the phase of *Doing* – we carry out the change (or test - preferably on a small scale) by implementing the change we decided on in the plan phase.

The phase *Check or Study* is aimed on the results analysis. We go through what went wrong, which is a lesson to be learned for the next time. This is a crucial step in the PDCA cycle. After we have implemented the change for a short time, we must determine how well it is working. On the basis of test implementation, we can find out whether the actions are really leading to improvement in the way we expected. Then, we need to decide on several measures (indicators) with which we can monitor

the level of improvement. The phase of *Acting* refers to the change adoption, its abandoning, or running through the cycle again. After planning a change, implementing and then monitoring it, we must decide whether it is worth continuing that particular change. *If it consumed too much of your time, was difficult to adhere to, or even led to no improvement, we may consider aborting the change and planning a new one. However, if the change led to a desirable improvement or outcome, you may consider expanding the trial to a different area, or slightly increasing your complexity.* This sends us back into the Plan phase and can be the beginning of the Ramp of improvement.

The Ramp of Improvement is a schematic representation of the use of the PDCA cycle in the improvement process. As each full PDCA cycle comes to completion, a new and slightly more complex project can be undertaken. This rolling over feature is integral to the *continual* improvement process. (Improvement Tools, 2008)

Figure 4: The Ramp of Improvement



Source: Improvement Tools, 2008

3.5 Process analysis and optimization

Process analysis and optimization represents an important way to understand EMS goals, since EMS represents, as any other management system, a **complex of units, relations and processes**. Generally, the management system is subject to analysis and documentation. Since management systems are obviously developed and documented in a short period of time, while processes are arising and changing

practically continuously, there is a strong effort to document all the aspect of production in their best form. Very often, the implementation of management systems' is the high time when firms started to think about all the processes and activities and their mutual links, in order to improve them in such a form to suit best the company needs. Although there is no management system which is completely perfect, it is in the firms' own interest to optimize and revise the management system on a regular basis. Improving the processes is also appropriate when a company had already adopted the management system and wants to revise the management system before recertification.

When discussing EMS we need to take into account process analysis and optimization, which is an additional part of QMS implementation. Process analysis goes hand in hand with most of activities during the whole QMS implementation.

The main aim of process analysis and optimization is to *“describe the current processes and analyze them, identify possible problems, which can for instance be poorly specified responsibilities and competences, missing documents, and duplicity of activities.”* (Procesy, 2007) The last example refers to largely obvious situation when some tasks are being done twice or more times, although they could be done only once and then be communicated within the organization in order to save time and effort of workforce. The process optimization is ultimately a long process; it suggests and agrees changes, in order to adjust the processes according to organizational needs responding to changing environment but also to internal influences. When the new system has been built, it needs to be consequently regularly revised, continually improved and effectively communicated to all concerned parties.

From the perspective of process analysis, the organization is regarded as coherent process, which is consequently divided into single, mutual, logically bound subprocesses and process steps. *“Defined processes and subprocesses together create a process tree.”* (Procesy, 2007) Processes are results oriented, i. e. value added oriented, which means that given process or its step bring about value.

The basic features of process organization and process management are as follows (Procesy, 2007):

- Key value creating, managerial, and supportive processes are identified;
- Each process has its user and each process is defined by value, which it creates for its consumer, external or internal;
- Each process belongs to a person, who is responsible for optimum course and outcomes (Foregoing notion states new definition of responsibility – employee is no longer responsible for performing activities, but for outcomes);
- Each process step has a certain defined responsibility;
- Individual outcomes of process steps are identified and interface for their further usage is defined;
- For all processes, indicators of required performance are set (measurable goals, standards), which can be then easily observed and evaluated. On the basis of analysis, the processes can be continually managed and improved;
- Customer satisfaction with supplied value (process outcome) is key indicator;
- Processes, which do not create value are identified and eliminated;
- Processes are permanently improved – performance parameters are subject to improve;
- Process performance can be compared with relevant external standards (benchmarking).

Processes are divided into 3 *main categories: value-adding, managerial and support*. (Procesy, 2007). Then, duplicitous or missing activities or responsibilities or links are found out, which allows to identify the side processes, functions and activities, which can be easily outsourced.

Among the most important benefits, which process analysis brings about is clear definition and illustration of responsibilities, definitions and relations can be optimized. We have possibility to monitor out-coming and final values of individual processes, which ensures efficiency and high productivity. On the basis of process

map we can shorten processing time of all processes, especially key (value-adding) processes. And finally, process analysis helps us to remove constraints in the organization by implementing team management.

Process management procedure consists of following stages (Procesy, 2007):

- Analysis of organizational current situation;
- Process definition, description, and optimization; Process diagram creation;
- Introduction and implementation of new process organization within a particular company;
- Consequent verification of implemented process organization with time distance.

Process analysis then comes up with graphic process map and process description (with category belonging) with illustrations of responsibilities, information and documents used and with relations among individual processes and process steps.

3.6 The Czech legal requirements concerning the environment

Czech law refers to any subject operating in the country. Law compliance is enforced by fines and sanctions resulting from activities which are not law compliant, or even law violating. This law compliance applies to all subjects regardless of the fact if they have or have not implemented EMS. EMS is only systematic guidance for subjects that want to start systematically deal with environmental aspects and who want to manage negative impacts on the environment in a more sophisticated manner. Nevertheless, they have to obey the law anyway.

Although, the Czech environmental legislation has been recently revised and amended, it still remains very extensive and difficult for a person to orientate himself/herself in. From the companies' point of view, the compliance with law

implies additional costs, because they need to pay a lawyer or environmental law specialists. For this reason, it is rarely possible for a firm to implement its EMS certificate ISO 14001 without a consultation firm. This might be very costly for small firms, which might in turn discourage them from obtaining the certificate.

According to Czech law, firms need to take into account and obey following acts:

- Act on Waste No 185/2001 Coll.
- Ministry of Environment Act on Catalogue of Waste, Register of dangerous waste, No. 381/2001 Coll.
- Ministry of Environment Act on Waste Treatment No 383/2001 Coll.
- Act on Wraps No 477/2001 Coll.
- Act on prevention of accidents caused by selected dangerous chemicals No 59/2006 Coll.
- The Water Act No 254/2001 Coll.
- Act on defective matters treatment, on emergency plan terms, on accidents notification, on disposal negative impacts of the accidents No 450/2005 Coll.
- Act on water pipes and drainage for public use No 274/2001 Coll.
- Clean Air Act No 86/2002 Coll.
- Act on chemicals No 356/2003 Coll.
- And appropriate laws concerning the activity where the firm operates.

All the acts above refer to rights and duties of all subjects operating in the Czech Republic. The law implies several important points, which a company implementing EMS must take into account.

3.6.1.1 Waste treatment and disposal

Among others, there is duty for all subjects to sort waste for further recycling. That means that all the subjects operating in the area of the Czech Republic are obliged to sort waste. However, in the Act on Waste No 185/2001 Coll. there is no

specification, how should the company sort its waste. The Act does not specify the scope of sorting. Majority of companies and households sort waste into three (resp. four) basic categories: paper, plastics, glass, and mixed waste. Nowadays, more and more people sort also Tetra Pak and aluminium. In rural areas, sorting biological waste is very common.

Companies are responsible for the gathering and transport of sorted waste; they usually hire a communal waste transporter on the basis of contract. If the company rents its facilities (building, offices, etc.), the owner (or lessor) is in charge of waste treatment. In case of small companies, a very little known fact is that companies are not allowed to use public waste containers, which are provided exclusively for citizens and households, on the contrary, companies have to solve their waste disposal by themselves.

Company must entrust an employee with waste management, only if the total amount of waste collected over the last 2 years exceeded 100t.

In case of exceeding 50kg of dangerous waste or 50t of other waste over the year, there is a notification duty, which must be sent to the municipal office till 15th February. The concerned companies use special form “*Notification of wastes*” for all its wastes in appropriate year. The form informs the public administration office about sorted categories, scope of the waste per each category, and way how they have been disposed of.

Hazardous waste treatment involves even more paper work. The company must set up a place where the dangerous waste is gathered – “gathering place”, but a firm is not entitled to store dangerous waste, only gather. The company needs to have permission to treat dangerous waste. When dangerous waste is transported, it must be documented in a special form “*Evidence list of dangerous waste*”. Large companies are obliged to carry out “*Plans of waste management*”.

3.6.1.2 Possible fines and sanctions

The company is threatened by fines and sanctions, when it violates the law. Therefore avoiding the violation of law and additional costs connected to it is one of crucial activities to ensure not only additional costs reduction, but also good reputation of the company in the eyes of the public.

According to the Act on Waste (2001), there are following sanctions:

A firm can be charged CZK 300 000,- in case when:

- it uses communal system of waste management which is maintained by municipality, or
- it has no paper contract with a waste transporter, or
- it has not organized another way of waste disposal in compliance with the law (namely the Act on Waste).

A firm can be charged CZK 1 000 000,- when:

- it does not maintain waste evidence, or
- does not carry out notification duty, or
- treats the waste without permission, or
- does not store the waste evidence for defined period of time, or
- does not insure the wastes against undesirable devaluation or outflow, or
- does not work up *Evidence list of dangerous waste* and does not accommodate them in appropriate places.

A firm can be charged CZK 10 000 000,- when:

- it does not categorize its waste according to Catalogue, or
- it hands over its waste to subject which is not entitled to waste treatment
- it takes over waste, despite of not having permission

A firm can be charged CZK 50 000 000,- for waste treatment without appropriate permission from administrative authority or in conflict with it.

3.6.1.3 Wraps limitation and EKO-KOM

EKO-KOM, a. s. (EKO-KOM, Inc.) has been established by the Ministry of Environment to solve the situation of growing legal requirements, and increasing disability of the private sector to orient itself in it. All the conditions set by Act on Waste No 185/2001 Coll. can be easily fulfilled by contract with this organization.

EKO-KOM, is an authorized company, which provides performance of take back disposal duty and wrap waste usage resulting from Act on wraps No 477/2001 Coll. This activity EKO-KOM provides on the basis of resolution on authorisation, assigned by the Ministry of Environment in March 2002. The take back disposal duty and wrap waste usage is obligatory to subjects, which put wrap or wrapped goods in the circulation, i. e. those who transport, fill or sell. Municipalities have duty to sort and use communal waste, to which also used wraps belong. These subjects can fulfil these duties by making a “*Contract on combined performance*” with EKO-KOM, a. s. (System EKO-KOM, 2009).

EKO-KOM carries out a system of waste sorting in municipalities and by the help of activities of subjects entitled to waste treatment, gathers data about the production of wraps and accepts payments, whose amount depends on the amount of wrap production.

3.6.1.4 Act on Chemicals No 356/2003 Coll.

Act on Chemicals (2003) sets legal frame for those who treat hazardous waste (toxic, mutagenous, caustic, toxic for reproduction, etc...). It imposes on firms to treat dangerous waste with responsibility. Each employee who works with carcinogenic matter must be trained by a person with appropriate professional competence. There also must be rules and guidance for treatment of chemicals and reference from the local hygiene station.

3.6.1.5 Act on Water No 254/2001 Coll.

Act on Water regulates subjects which need water for its operation. It is obvious, it includes almost all subjects as water is necessary for everyone, even a small

newsagents or an office can not get along without tap water. The Act prescribes, that any subject must have permission to treat water (day water or underground water) for the purpose of drinking water take-off and waste water drain off.

Constructions or activities which are not obliged to have permission, but can affect water conditions need to seek agreement from an administrative body. There is duty for all subjects to use the best available technology to save the environment. There are fines for waste water drainage, when overall yearly drain off exceeds 100 thousands m³.

According to Act on prevention of accidents, firms are obliged to work out a list of all dangerous substances on its premises and on their basis to suggest the registration of the object. The firm has a duty to work out risk analysis and evaluation of major accidents – emergency plan. In case of a serious major accident, there is notification duty towards administrative body.

3.6.2 Problems with Czech environmental legal frame

Although the Czech legal frame concerning environment is extensive, requiring many administrative activities, such as monitoring waste generated by the organization and keeping “catalogue of waste”, there are problems with enforcement of law. There is relatively little evidence of those who have been really punished when violating the law. Likewise, in case of large companies with huge capital, fines charging 1 million Czech Crowns do not really hurt them and discourage them from further violation. Especially in case of waste treatment, nobody is really punished for not sorting its waste.

Nevertheless, application of the **principle “polluter pays”** has been set in the legal frame and therefore we can expect this situation will get better. In this context, it is important to mention the activity of building overall environmental awareness, where the role of citizens is increasingly crucial, since clean environment should matter to everyone.

3.7 Linking EMS with Corporate ethics

From corporate ethics perspective, there are several ways to look at EMS and consequent ISO 14001 certification. First, there is the question of why to adopt the certification, since motivations are considered to be essential in corporate ethics.

Second, there is the question of compliance with laws and norms. Why do firms comply with these certifications? Why do they stop complying? Are there firms which promote ISO type certifications but really don't follow them? These questions are all related to business ethics because of the importance of behaviour, honesty, and following-through of commitments, and transparency.

Third, ISO certification is related to the whole notion of Corporate Social Responsibility (CSR). CSR is about firms voluntarily taking actions beyond what is required by law. In some respects ISO 14001 and related compliance programs are like this because they are intended to be voluntary and above minimum legal requirements.

3.7.1 Utilitarian and Kantian discussion about the EMS

According to utilitarian approach in business ethics, the final outcome is the essential factor to consider, on that basis we can judge whether a particular activity is positive or negative (Stewart, 1996, pp. 73). Therefore from Utilitarian perspective, the incentives of organizations to build EMS are less important, since what ultimately happens is important to them.

Kantians (Stewart, 1996, pp. 99)., on the other hand, concentrate on the process of a particular activity, which evaluates whether a particular activity is good or bad on the basis of process, i. e. means by which the effects are achieved. That is why Kantians believe motivation to be important. External motivation is right for Utilitarians, but not for Kantians. Kantians like firms to voluntarily adopt, not because they do so for profitability or public recognition or pressure.

Kimerling (2001) provides a case study of an oil company's "*voluntary initiative to use international standards and best practices for environmental protection in the*

Amazon Rainforest” (p. 426). In that study, the oil company’s voluntary agreement to “minimize pollution” did not always translate into their engaging in ethically sound or even legal environmental practices. The oil company, for instance, violated an Ecuadorian law that prohibited the dumping into waters of materials that threatened aquatic life (p. 441) while at the same time, claiming to be ISO 14001 compliant. Kimerling then concludes, “*that for the application of international standards to be meaningful, the international community needs to move beyond statements of principle and develop mechanisms that can be used to evaluate, verify, and monitor independently environmental claims by transnational corporations*”.

James (2003, pp. 449) outlines “*Many transnational corporations voluntarily adopt “best practices” standards (such as ISO 14001) with respect to workplace and environmental practices when conducting international trade in an effort to show trading partners that they are operating according to recognized ethical and legal standards – that is, that they are regulating themselves.*”

For instance, an oil company might claim that it is following sound environmental practices, or a textile distributor might claim that it is not selling products made by child labour. “*However, if the underlying economic incentives to violate the recognized ethical and legal standards remain – in that profits could be increased by dumping toxic waste into a nearby-lake or by selling products manufactured with child labour (...), we should not be surprised to find businesses or individuals violating the ethical norms or legal standards.*” (James, 2003, pp. 449).

A related issue is measurement of environmental performance among organizations, which implies question how to measure and report efforts to adopt policies that go above minimum legal requirements. ISO 14001 certification might be one way, but it is not the only way, nor is it always the best way.

3.7.2 Why companies implement EMS?

When a subject decides to adopt Environmental Management System, the company usually responds to a situation where several driving motives work and form internal or/and external motivations.

First, EMS implementation is very often driven by company strategic decisions, i.e. long-term objectives and visions which a company identifies to be relevant for its further long-term prosperity and success. One of these strategic objectives can be to gain competitive advantage. This might be essential point which would help the company overcome its competitors and acquire better position on the market overall. In a selection procedure or public competition might be relevant whether or not the organization has implemented the EMS.

Second, the driving reason to implement EMS can be also the fact that a company belongs to a parent company which identifies the EMS implementation as one of its key strategic objectives and therefore wants to imprint that approach also into the subsidiary company. Third, there are also situations when EMS is implemented as a response to strong costumers' requirement.

On the other hand, there are non-strategic reasons why an organization adopts EMS. For instance, competitors have implemented such a scheme as EMS and a company needs to keep pace with the competing firms, otherwise it would lower company ability to compete within a particular sector. However such a decision can not be classified as strategic decision, because it responds to sectoral competitive pressure and therefore EMS adoption is rather short-term decision. While strategic decisions are rather proactive, the result of active long-term pursuing of the company opportunities, on the other hand, to respond to a recent market situation is rather passive keeping pace with the competition.

Nowadays, there are also cases that companies want to acquire ISO 14001 certificate because they need to make an investment using financial sources left in the budget at the end of fiscal period. The main aim is to spend money on a tax-deductible item in order to lover tax liability of a particular company. Such an action has of course nothing to do with systematic EMS implementation approach, which is rather long-

term, nor is it usually successful, because success of the EMS implementation often requires deeper understanding on the part of the company.

Poor practice is also transferring EMS from a particular company to another by the use of templates of documents. Each company differs from the others and is somehow distinctive, what can be useful and appropriate for one company is not always appropriate for another. Architecture of the EMS should be made-to-measure or the company.

3.7.3 EMS as a part of CSR

We can look on EMS as an inner pillar of a wider concept of Corporate Social Responsibility, whose aim is to integrate economic, social as well as environmental aspects of business activities. Although EMS represents only a part of CSR, we can find a lot of parallels, especially in companies' motivations to start systematically deal with problems and interests of pressure groups. Many interesting links with possible benefits of both CSR and EMS can be identified.

“A recent survey by PricewaterhouseCoopers of 140 chief executives of U.S.-based multinational companies found that 85 per cent of them believe that sustainable development will be even more important to their business model in five years than it is today.” (ISO 26000 Guidance, 2009)

Corporate Social Responsibility (CSR) according to Paulová (2008, pp. 181) is a concept of integration of social and environmental aspects into economic activities of a company as well as into interaction with stakeholders on the voluntary basis.

CSR is about relationship of an organization and all its concerned stakeholders – customers, owners, investors, employees, public administration, suppliers, competitors, communities, etc. Garriga and Melé (2004, p. 59) argues that *“instead of focusing on generic responsiveness, specific issues or on the public responsibility principle, the approach called “stakeholder management” is oriented towards stakeholders or people who affect or are affected by corporate policies and practices.”* The central goal is to achieve maximum overall cooperation between the entire system of stakeholder groups and the objectives of the corporation. Through the CSR, an organization states commitment to run its economic activities efficiently

and responsibly to society and natural environment as well as regarding to stakeholders' interests. Paulová (2008, pp. 182) points out that every stakeholder influences an organization in a certain way. Owners and stakeholders are interested in growth and prosperity of their organization, employees value working conditions, for customers the quality of goods and offered services is more important, government and public institutions are concerned with unemployment reduction and business conditions, and finally, citizens are interested in activities in the locality of their operation.

Moreover, one important stakeholder: non-governmental organizations, who play increasing role in related managerial fields, for example in natural resources management, which bring together municipalities, citizens, companies responsible for the treatment of natural resources. According to Herová (2007, pp.82), the position of non-governmental non-profit organizations engaged in sustainable development needs to be strengthened. Therefore, philanthropic activities of private sector have not been fully appreciated.

CSR speaks about organizational decision to satisfy social needs which go beyond minimum legal requirements and commitments arising from collective agreements. Thanks to CSR, organizations of all sizes can cooperate with their stakeholders to help to achieve balance when realizing economic, social and environmental goals. CSR is becoming more and more relevant in the context of transforming ideas of sustainable development into practice.

CSR integrates three basic pillars, often called 3P (Petříková, 2007):

- *Profit* – economic pillar
- *People* – social pillar
- *Planet* – environmental pillar

Table 1: CSR – pillar structure

Economic pillar	Social pillar	Environmental pillar
Principles of willingness in organizational management, Ethical codex	Company philanthropy and voluntary actions	Environmentally friendly operation, products, and services
Rejection of bribery	Employment policy, health and safety of employees, education, requalification	Protection of natural resources
Protection of know-how	Equal opportunities for men and women	Investment in environmentally friendly technologies
Relationships with suppliers	Rejection of children labour	Environmentally friendly organizational culture
Relationships with customers	Human rights	
Quality and safety of products	Jobs for disadvantaged groups and minorities	

Source: Petříková, 2007

Table 1 above refers to activities belonging to CSR. The main effort of the pillar scheme is to show that among items equal relations can be created. Small and medium enterprises often adopt Quality management system (QMS) and Environmental management system (EMS) that can be understood as the economic and environmental pillars and are prevailing organizational priorities. However organizations very often implement also the Health and safety management system (HSMS - ISO 18001) which witnesses an increasing importance of integrating also social aspects into the organizational decision-making.

3.7.3.1 Benefits of CSR

The positive effects of CSR which are consistent also with benefits of EMS, are following (Paulová, 2008, pp. 185):

- CSR enables to manage potential risks (responsible approach in Human resource management, QMS and EMS can protect the organization from environmental fines, costly trials which can consequently harm organizational goodwill)
- CSR helps to increase profit (customers rather buy from responsible companies)

- CSR helps to cut costs (customers' pressure on efficient utilization of resources)
- CSR boosts long-term potential of a firm (CSR supports hardly measurable growth conditions, for example: goodwill, employees motivation to work for the given organization, good relationships with concerned community inhabitants and local government)
- CSR stimulates innovative thinking and management procedures
- CSR enforces firms to maintain their legitimacy (CSR perceives the firms as a part of society, which consists of stakeholders. The firm should create room for open dialog with all concerned parties, resulting in justifying firms existence and convincing them about firms contribution)
- CSR strengthens trust in a brand and helps to develop good reputation
- CSR increases firm's attractiveness for investors (investment funds rather choose opportunities according to financial, economic, social, environmental, and ethical factors).

3.7.3.2 CSR and the EU

The EU is currently concentrating on two main objectives in the context of global competition and ageing of population. *“The two objectives are to ensure sustainable growth and to increase and improve employment with regard to sustaining the model of European society based on equal opportunities, good living standard, social cohesion, and healthy and clean environment.”* (Paulová, 2008, pp.183)

Therefore, it is essential for companies to do as much as possible to secure efficiency of production of goods and services as well as to manage possible effects on the environment, while creating wealth, value and employment.

3.8 Literature review – conclusions

Czech legal frame concerning the environment is extensive, requiring many administrative activities and notification duties. Nevertheless, the common **principle “polluter pays”** finally started to apply in other developed countries. Hence, we can

expect this situation will get better. In this context, it is important to mention the activity of building overall environmental awareness, where the role of citizens is increasingly crucial, since clean environment, as public good, matters to everyone. Although, the EMS must comply with legal requirements, it is still a voluntary activity, by which the organization controls its significant environmental aspects. Each organization must adhere to rules regardless of the fact if it has or didn't have implemented the EMS. When an organization decides to adopt the EMS, it commits to fulfil legal requirements and other requirements. However, where appropriate, an organization can do more for the environment and employ such treatments leading to cost reduction, all at once. While an organization strives towards its business objectives, it can set environmental objectives and create mutually consistent strategy, taking into account the economic, environmental and social dimension. The investment into social and environmental dimensions is not quickly returnable; it tends to show itself in the long run. If today's business is no longer focused on short-term profit, the approach towards sustainability is appropriate when long-term prosperity is one of the organization's goals.

In order to be efficient, the EMS is supposed to be designed according to company's needs respecting specific sectoral and organizational conditions. The contrary approach when an organization is subject to change according to requirements subscribed by the EMS standard, will not bring the expected positive effects.

Now, we can see EMS in a wider framework with many interconnections. From this viewpoint, a lot of problems and challenges are visible. In following section, the theoretical framework will be reflected in practical functioning of the EMS in a company.

4 Case Study – Environmental Management Systems according to ISO 14 001 in a company

This chapter is devoted to outlining problems with the implementation and maintenance of the existing EMS according to ISO 14001 in the company NeXA, s. r. o. (NeXA, Ltd.). With the help of lessons learned from the theoretical part, several ways of the EMS improvement will be examined and analyzed in order to suit the company needs.

Although an organization can never operate without the environment (in the form of resources) the environment might be better off without business. However, from the point of view of a company, the profitability and long-term prosperity is the crucial objective, which differentiates it from the non-profit organizations and institutions. The main aim of a subject operating in business is making money.

“Adoption of ISO 14001 will not in itself guarantee optimal environmental outcomes. In order to achieve environmental objectives, the EMS can encourage organizations to consider implementation of the best available techniques, where appropriate and where economically viable, and fully take into account the cost-effectiveness of such techniques.” (EMS Requirements, 2005, pp. 10)

4.1 Introduction of NeXA

NeXA, s.r.o. is an advisory company with a wide range of services in the field of strategic consulting, information security, management systems, subsidies and investment consultancy, project management, personal consultancy, software development, and web design. NeXA Group is now counting 19 employees.

The mission of the company NeXA is to flexibly respond to customers' needs and to provide professional services in key segments of the clients' company business strategy and thereby contribute to the successful implementation of business plans.

To the key services of the NeXA group belongs: initiation of management systems according to ISO 9001, ISO 14001, ISO 27001, ISO 20000 (ITIL), consultancy in the field of acquiring public subsidies, consultancy in the frame of investment projects, leading and realization of projects, supervision of activities, creation of procedures for software development control and software development. As a permanently significant profiling activity of strategic development of organizations NeXA provides services related to personnel audits including setting up the career and incentive program for employees of client organizations. In the relevant fields, NeXA also realizes educational activities for auditors and technical experts' (e.g. ISO 27001, ISO 9001, ISO 14001 etc.).

All mentioned activities are included in NeXA's quality management system according to ISO 9001:2000 that is certified by international company SGS. Besides QMS, NeXA has implemented also other ISO standards: ISO 14001 (EMS) and ISO 27001 (Information Security standard). NeXA has got a valid security audit by National Security Authority for the degree Confidential.

NeXA is a specialized and highly competent company with a team of professional consultants and experts who are thanks to their qualification and their personality ready to contribute to satisfy clients' needs. NeXA pays attention to personal development and education of its employees.

NeXA is a member of a number of professional associations, they participate in education by delivering lectures in selected areas and also they organize professional conferences. NeXA closely cooperates with private high schools where they deliver lectures concerning topics of corporate strategy, ISO standards implementation, the lectures are for audience and provide professional experience viewpoint.

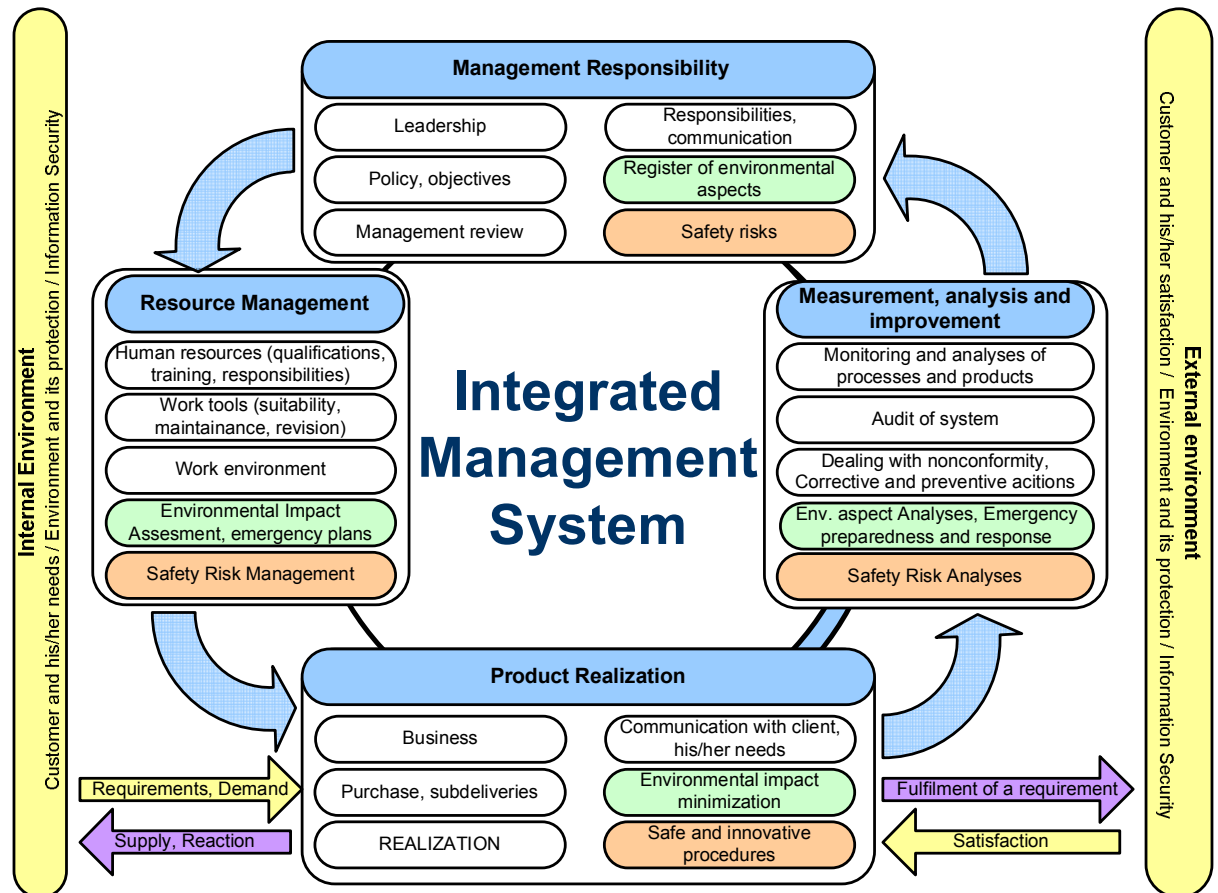
Formally, NeXA operates in rented offices in Prague – Letňany. NeXA has a contract assigning all rights and responsibilities to the owner (Standby, Ltd.) of the building.

4.2 EMS in NEXA, s. r. o.

The company implemented ISO 14001 in 2007. The main incentive to adopt the standard ISO 14001 was simple; NeXA needed it in order to take part in a public competition. Nowadays, when a company wants to win a public competition administered by a municipality or any institution of public administration, it needs to fulfil a number of requirements, and one of them is very often to have successfully adopted standards ISO 9001 (Quality Management Systems) and in a number of cases also ISO 14001 (EMS). Some public competitions do not require ISO standards, but they can be considered as an advantage. As a result, for companies focusing on public administration the EMS is no longer a competitive advantage but necessity. Not having EMS would disadvantage or even exclude them from taking part in such competition.

As mentioned in the chapter introducing NeXA and its activities, NeXA has implemented several ISO norms, which have been gradually included into Integrated Management System (IMS) as we can see on the scheme Figure 5 the management system and its interrelations. Integrating the management systems into one IMS is appropriate, because all ISO norms are designed to be mutually compatible. As examined in theoretical part more in detail, integration of the existing management systems brings about reduction of documents, separated guidelines, which in turn brings higher efficiency, and consequently cost savings. The IMS maintenance is also less time consuming and less costly. Supervisory audits can be carried out all at once for lower cost than auditing all management systems separately.

Figure 5: Integrated Management System in NeXA



Source: Model of a process-based QMS from (QMS – Requirements, 2002, pp. 11), model is adopted by NeXA, s.r.o.

From the chart above, we can see the IMS interrelations. Note, the environment overlaps from the external environment into internal thanks to the EMS; environment protection is being managed in the company activities. The arrows imply key value-adding activities and information flows. Apparently, there are two main information channels, first between Customers and Management responsibility, second between Measurement, Analysis and Improvement. The inflow and outflow is being done only by one company activity which is Services Realization as the only communication channel between NeXA and its internal and external environment.

According to the Standard (ISO 14001, 2007), top management shall appoint an employee who shall have defined roles, responsibilities and authority for

- a) ensuring that an environmental management system is established, implemented and maintained in accordance with the requirements of the international standard ISO 14001
- b) reporting to top management on the performance of the environmental management system for review, including recommendations for improvement.

4.3 Environmental aspects in NeXA

Since NeXA does not own the building where its offices are located, it does not have to consider many environmental issues concerning the building maintenance such as heating, lighting, emergency plans, etc... Thus, the first substantial factor referring to how the final list of environmental aspects will look like is whether the company offices are subject to ownership or lease. Nevertheless, the organization should strive to select the appropriate offices taking into account also environmental dimension, i. e. whether the building does not require extensive heating (because of insufficient building isolation and obsolete windows), and so on. This aspect will be discussed more in detail in section 5.2.4. influence on business partners.

4.3.1 Register of environmental aspects

Administrative activities involve a number of aspects, from which several can be considered as significant environmental aspects, i. e. those which interact with the environment and the organization can influence and control them in order to minimize their negative impact on the environment.

Table 2: Register of environmental aspects – existing form

Environmental aspect	Possible environmental impact	Related legislation	Note
Lighting in offices by fluorescent tubes	Generation of hazardous waste Accidental mercury leak	Act on Waste No. 185/2001 Coll.	Ensured by the office building owner
Electro-waste (monitors, screens, PC, batteries, telephones, etc...)	Generation of hazardous waste, accidental heavy metal contamination of the local environment	Act on Electro-waste No. 7/2005, Act on Waste No. 185/2001 Coll.	Electro-waste is taken back to producer (or retailer), or carried to a waste-yard, or given as a present to somebody (documents about taking back or donating need to be retained in the EMS documentation).
Printer toners	Generation of hazardous waste	Act on Waste No. 185/2001 Coll.	Priority of using toners with no dangerous chemicals. Toners currently used do not contain any dangerous chemicals; therefore they can be easily disposed of after using. Preferably they are taken back by HP.
Paper	Generation of waste	Act on Waste No. 185/2001 Coll.	Sorting out of waste
Plastics	Generation of waste	Act on Waste No. 185/2001 Coll.	Waste sorting
Chemicals for the cleaning and maintenance of offices	Wastewater pollution	Act on chemicals No 356/2003 Coll.	Ensured by the office building owner
Chemicals for the cleaning and maintenance of technical equipment	Wastewater pollution	Act on chemicals No 356/2003 Coll.	In case of usage of alcohol or other cleaning agents , principles of safe storage and treatment are set in the “Safety Data Sheet”.
Water, wastewater	Generation of wastewater	Act on water pipes and drainage for public use No 274/2001 Coll.	Ensured by the office building owner
Energy consumption	Exploitation of non-renewable resources	Act on energy management No. 406/2000 Coll.	Ensured by the office building owner
Use and maintenance of company cars	Fuel, motor oil, break fluid, and cooling fluid leakage, accidental leaks; oil filters; emissions exploitation	Road Traffic Act No. 361/2000 Coll.	Cars are every 2 years subject to the technical control where emissions and technical capability of a vehicle is examined and subsequently confirmed
Using of Electro devices: risk of fire	Air pollution	ČSN 33 1500, ČSN 33 1610	Electro revision of all electric devices, including extension cables, Fire alarm instructions

Source: NeXA internal EMS documentation, last revision 31.3. 2008

5 EMS revision and analysis in company NeXA

As long as the company knows what the rules are, what are the auditors' requirements and what the possible pitfalls would be, the part of the risk management (emergency preparedness) is elaborated very well. The EMS creators in NeXA, however, really tend to be straightforwardly focused on fulfilling the legal requirements; in spite of EMS is not only about complying with the law. They can serve the good of the company, both in economic and environmental sense, when appropriate tools are applied. There are a number of possible solutions in a company providing services instead of rigidly adhering to legal requirements. From the "Register of environmental aspects" above, we can see that a considerable proportion of responsibilities are delegated to owner. This is common practise, since these responsibilities are assigned to owner according to law.

Following sections are aimed at analysing of the processes of internal audit and how non-conformities are dealt with. Section "5.2 Improvement opportunities" identifies possible opportunities for the EMS improvement, especially those that the company itself can influence.

5.1 Internal audit

Internal audit is a control process which is supposed to verify whether the management system operates properly, and matches the reality of managing organizational activities and system of documentation. In the ISO 14001 the internal audit is defined as a "*systematic, independent and documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which the EMS audit criteria set by the organization are fulfilled.*" (EMS Requirements, 2005, pp. 13)

Internal EMS auditing involves measuring compliance with entity's policies and procedures required by the ISO standards, legal and other requirements. Internal audit should identify possible nonconformities in the management system, i. e. activities which are not being done in accordance with documented guidelines. The process of internal audit is followed by an analysis of the causes of nonconformities.

During internal audit, we can find out **unsystemic nonconformity** referring to a mistake of an individual, and a more consequential **systemic nonconformity** which requires a revision of the management system and a change in the concerned parts of guidelines.

In NeXA, internal audits are carried out once a year before supervisory audits, according to the process diagram Figure 6, attached in section “9. Supplements”.

5.2 Corrective and preventive actions

Nonconformities discovered by the internal audits are systematically analyzed, examined and documented in order to implement necessary **corrective and preventive actions** to precede their further occurrence.

Corrective and preventive action is a documented guideline for dealing with nonconformities. In the ISO 14001 corrective and preventive actions are defined as “*actions to eliminate the cause of a detected or potential nonconformity*” (EMS Requirements, 2005, pp. 14). Once corrective and preventive actions are outlined, they are assigned to an employee, who is then responsible for an efficient solution. In the process scheme drawn in Figure 7 attached in Supplements, we can see how NeXA handles this activity, the processes, documents and assigned responsibilities.

5.3 EMS improvement opportunities

Since NeXA does not own the building where its offices are located, it does not have to consider many environmental issues concerning the building maintenance such as heating, lighting, emergency plans, etc... These responsibilities and choices fall into the owner’s competences. Nevertheless, NeXA must deal with other activities as sorting of waste, disposal of print cartridges, etc... Before supervisory audit, it is necessary to review the EMS system and show some extend of improvement. One of the aims of this paper is to outline different environmental aspects which deserve attention; especially those which bring about also some economic effects, such as cost savings. Economic viability is an essential point in terms of consistency with company’s economic objectives.

Well implemented EMS can lead also to cost reduction. However, in some cases it requires initial investments and cost savings will show themselves rather in long-run. In order to show the improvement in exact numbers, we need to set **environmental objectives and targets**, which must be controlled on a regular basis.

Last internal audit identifies possible opportunities of EMS improvement convincing that NeXA can take more actions in order to improve its environmental performance. The table below suggests how the existing Register of environmental aspects could be amended. Minimizing environmental impact of significant environmental aspects is accompanied by a number of treatments. The following section deals with proposed amended environmental aspects more in detail.

Table 3: Amendments to Register of environmental aspects

Environmental aspect	Possible environmental impact	Related legislation	Environmental objectives	Environmental targets
Glass waste, Tetra Pak waste	Generation of waste	Act on Waste No. 185/2001 Coll.	Extend the scope of waste sorting by 2 categories: glass and Tetra Pak, Overall environmental objective: to sort out as much waste as possible – minimize mixed waste	Reduce overall mixed waste by at least 60 kg Increase of sorted Tetra Pak at least by 10 kg per quarter, increase of sorted glass by 50 kg per quarter
Drinking water	Generation of plastic waste	-	reduction of plastic waste coming from wrapped water, utilization of local tap water	increase usage of filtered tap water by 400l per quarter, reduce plastic waste (PET bottles) by 20kg per quarter
Transport	Exploitation of non-renewable resources and emissions	-	increase usage of public transport within Prague, reduce fuel consumption	reduce fuel consumption by 180 l per quarter
Selection of business partners	Spreading good environmental practices	-	influence on business partners in terms of environmental friendly approach - enrich selection procedure with environmental issues	10% of all partners with implemented EMS (or intending to do so)
Paper consumption	Generation of waste	-	Reduction of overall paper consumption increase utilization of recycled paper	5% reduction of overall paper consumption per quarter 20% of overall paper consumption - recycled paper
Print toners	Generation of waste	-	Preference of suppliers who refill cartridges Purchase of cartridges with no hazardous waste	Taking back of at least 80% of all used cartridges per quarter must be documented.
Environmental education and training	Spreading good environmental practices	-	Building of strong environmental awareness	At least 4 employees trained per quarter

Source: own research and processing, table structure inspired by NeXA internal EMS documentation

5.3.1 More precise waste sorting

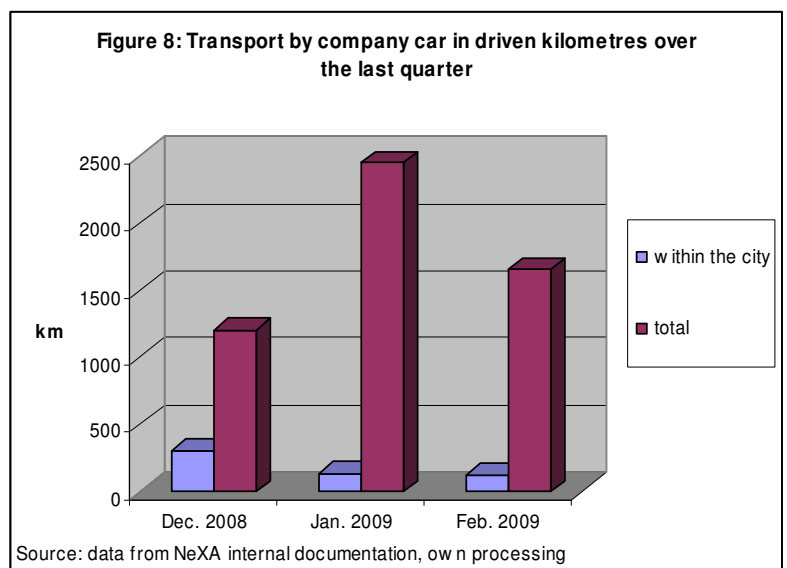
In the case of waste sorting we are dealing with unsystemic nonconformity, i. e. the current waste sorting into 3 categories (paper, plastic, mix) is not being done precisely. Besides, there are two waste categories, which are not yet sorted out – Tetra Pak and glass. Disadvantage of this activity is that glass and Tetra Pak wraps need to be gathered and time after time carried to waste-yard at company's own expenses, as long as it is illegal to use communal system of waste management maintained by municipality. Corrective and preventive action is then suggested as follows:

Management representative for the EMS is then in charge of following corrective actions:

- Add special sorting categories, glass, Tetra-pac, extending of contract (lease)
- Training in waste sorting for employees,
- Equipping each office with waste sorting bins,
- Equipping each office with guidelines of waste sorting.
- Ensure transport of sorted waste to waste-yard on regular basis.

5.3.2 Increase utilization of public transport

NeXA uses 5 company cars in total. For its employees, especially for consultants and sales people who usually travel to costumers' offices, the company provides one car to share. NeXA, however, does not have any policy encouraging employees to use public transport, when they go to a business meeting within the city, they could use public transport. According to data collected and analysed from the company's internal documents over the last available quarter



(see Figure 8), almost 12% of all company car transport is realized within the city and therefore could have been carried out by public transport, not only for the environmental, but also for economic reasons. Time dimension also needs to be considered, since the company is placed in the Prague suburb, it would not be efficient to persist on public transport, in cases when the time of journey would last much longer. The aim of this action is to motivate employees to use public transport when appropriate. In return, the company will compensate the employees who prefer public transport and thus preclude wasting of fuels by a specific compensation intended to cover part of their Prague public transport pass.

5.3.3 Utilization of local source of water

Once NeXA moved to its current office building, initially there was a problem with drinking water – some employees are not willing to drink tap water and prefer wrapped water. Consequently, there was a problem of increasing plastic waste coming from wrapped water, thus the company management decided to solve the situation by installing Fontana Watercooler, which is filled by huge 18,9l bottles. Although the huge bottles are returnable empties, a certain amount needs to be gathered up before they are taken away by the Fontana Watercooler service. It neither looks well, nor does it represent the best way in terms of environmental issues and costs. The practice, when the bottles of water are carried by a van from the other side of Prague, or even other side of the region of the country, is not environmentally friendly, even though it is better than the previous, when the offices were full of plastic waste coming from the wrapped water.

There are also other alternatives how to deal with water delivery that is to filter local tap water and utilize local water source. It is not only environmentally friendlier solution, but also less costly. One can argue that tap water is contaminated by chemicals, even though it is water fulfilling hygiene limits of nitrates, chlorine, concentrations of dangerous heavy metal etc... It should be admitted, there are problems with the quality of wrapped water as well as with tap water, yet by filtering it with a high quality filter, the disadvantages of tap water can be reduced to minimum.

5.3.3.1 Problems with local tap water

Content of nitrates

Natural conditions of nitrates occurrence in water (2mg/l) have been gradually disturbed by human settlements and after-War intensification and chemicalization of agriculture. Especially the use of fertilizers is the main cause of high concentration of nitrates in water. Nitrates in drinking water can have serious impacts on human health; according to League against cancer (O vodě, 2008) everyday intake of water which contains above 5mg/l of nitrates can cause digestive system cancer or fertility problems. Current nitrates limit stated by Act No 376/2000 Coll. is 50mg/l. Although nitrates' limit in tap water is mostly under 50mg/l, it tend to be still on high level. Water stations are not accommodated with appropriate equipment for removal of nitrates.

Water hardness

Another important indicator of the quality of drinking water is **water hardness**, defined as total calcium and magnesium content, in laboratory analysis indicated as Ca + Mg. These components are essential for good functioning of our cardiovascular system. From water, utilization of Mg and Ca in organism is even better than from organic matter. It is very unhealthy to drink water which is free of Ca and Mg (distillated water), because this water takes these essential minerals from human organism and therefore can cause serious diseases. Ministry of Health Act No 252/2004 Coll. which states requirements for drinking water quality, recommends Ca content 80mg/l and Mg content 30mg/l. (Pitná voda, 2008). Nevertheless, when these contents are exceeded, water scale emerges, which deteriorates the water quality, especially after boiling. In these cases it is worth to remove the exceeding Ca + Mg content, but only the amount above the limit, not all Ca + Mg content.

Heavy metals in drinking water

Heavy metals are leached into underground water from rocks, but also from electric power industry and mining wastes. The biggest problems in CR causes arsenic.

Arsenic toxicity and carcinogenicity is really enormous. World Health Organization decided about admissible limits of arsenic in drink water, they have been reduced from 50 µg/l to 10 µg/l. (Arsenic in drinking water, WHO, 2008)

5.3.3.2 Instalment of drinking water filter

Although, overall quality of drinking water has been measured and controlled, there are problems with some components which deteriorate the water quality. Therefore, a good alternative to wrapped water or raw tap water is a drinking water filter, which cleans tap water, removes most carcinogenic nitrates (from 50mg/l to 1-4mg/l). Herewith, filter Dionela FDN 2 retains mineral value of water; the filter does not deform contents of components as Ca + Mg, chlorides, sulphurs, etc...

Financial plan

The overall drinking water consumption in the company is estimated to be about 8 liters a day, which is 168 liters a month and approximately 2016 liters a year. Variation in water consumption affected by seasonal influences is also considered. By installing filter Dionela FDN 2, NeXA can decrease its costs by almost 13 700.

Table 4: Financial plan: comparison of expenses

Costs of drinking water with filter in CZK	
water filter - model Dionela FDN 2	4800*
instalment	700*
life span	10+ years
annual maintenance cost (regeneration of filter inlay)	750*
overall costs of filter and maintenance per month	108.33
price per m ³ tap water (from Prague water station)	55**
price per 1l raw tap water	0.05
filtered tap water per 1l	0.64
annual cost of filtered water (consumption of 2016 litres)	1290.24

Source: own processing, *taken from kristalovavoda.cz, **taken from Cena vody (2009)

Prices of wrapped water in CZK	
Fontana Watercooler price per 1l (18,9l bottle)	7.4
Mineral water price per 1l (1,5 bottle)	10
Annual costs for wrapped water Fontana	14918.4

Source: own processing, current prices taken from watercooler.cz

5.3.3.3 Communication as a basis of success

One of the basic presumptions of success of drinking water filter instalment is that the activity will be well communicated through the organization. In the case of filter instalment the company should conduct a survey about how do employees feel about filter instalment asking about what kind of water they drink and why. A sample of this kind of survey is attached in section "9. Supplements". Likewise, the company management could let its employees know that the decision about the filter instalment has been done on the basis of survey results, where each employee could express his/her opinion knowing that each employee is concerned and employee opinion really matters to company management.

Employees' health and safety belongs to long-term goals and activities which the company cares about. Consequently, it is worth to organize special training regarding drinking water, since the quality of drinking water matters to everybody. Education on the level of organization is crucial, since a company influences people who work for it, consciously or unconsciously. The importance of environmental education on the level of organizations is therefore increasing.

5.3.4 Influence on business partners in terms of environmental friendly approach

There is no company which operates completely separately. By its behaviour the organization can inspire or even influence its partners, especially suppliers. The management should keep in mind: the company influences its business environment by selecting its business partners. The way lessors, suppliers, or customers are chosen can be more precious and should contain also measurable indicators according to which the partners are evaluated. With the help of its EMS it can enrich selection procedures with environmental issues. As a result, the organization could build an efficient partnership which responsible consumers would welcome. Nevertheless, there are problems how to compare environmental performance, when each company has its own specific set of measures. Therefore, in the beginning, the organization could use only the criterion whether or not the potential supplier has implemented EMS.

5.3.5 Reduction of paper consumption

It is obvious, that overall paper consumption should be reduced as much as possible, but not at the expense of performance. In other words, we must reduce paper consumption and avoid wasteful use of paper where appropriate. In the first stage the paper consumption should be reduced and in the second stage all paper should be sorted. One of alternatives is also gradually utilize recycled paper. As well as other aspects, this would be mentioned in environmental education and training.

5.3.6 Refilling of printer toners

The practice of refilling empty laser printer toner cartridges with new toner powder enables the cartridge to be reused. Environmental impact of refilling of toners is considerable; refilling rather than replacing a cartridge saves approximately 7.3 liters of petroleum and releases 0.1 metric tons less CO₂ (Toner refill, 2009). Single cartridge is reused several times, eliminating much of the impact of manufacture and distribution.

5.3.7 Environmental education and training

Environmental education and training represent an important step in building environmental awareness as well as sustainable approach in business. This training helps employees to make intelligent, informed decisions about how they can take care of the environment. Sauv  (1996, pp. 23) argues *“the ultimate goal of these interrelated dimensions of contemporary education is the development of responsible societies. And sustainability is one of the expected outcomes.”*

6 Recommendations: the EMS improvement in company NeXA

This chapter is devoted to the summarization of relevant findings from the foregoing chapter. During internal audit, we have found that NeXA can take more actions in order to improve its environmental performance. In fact, the company can go beyond the compliance with legal requirements and develop its environmental profile according to company needs. Besides, NeXA strives to be a socially responsible company, thus one of the recommendations is to include all this strategic goals into a single CSR concept.

The analyses carried out in the foregoing chapter dealt with possible improvement actions. In order to transform them into real recommendations, **environmental objectives and targets** must be set for each of the suggested actions. The concrete objectives and targets for the proposed improvement actions are outlined in the “Table 3: Amendments to Register of environmental aspects”. Environmental aspects can be then easily and effectively measured, because “*what gets measured gets managed*” (Putnam, 2002).

The following sections summarize findings from foregoing chapters and integrate them into four main thematic units.

6.1 Extending the scope of EMS

On the basis of the previous chapter which identified opportunities of the EMS improvement, several points can be concluded. The organization can improve its environmental performance by extending the scope of environmental activities, in particular by carrying out various additional activities, which are not strictly required by the law, but they are appropriate and efficient in terms of costs’ savings, eventually they bring other benefits.

Table 5: EMS Improvement programme

Environmental aspect	Programme
Drinking water	<ul style="list-style-type: none"> - conduct a survey about water preference - organize filter instalment - reduce wrapped water orders
Waste sorting	<ul style="list-style-type: none"> - add special sorting categories, glass, Tetra-pac, extending of contract (lease) - equip each office with bins for sorted waste, - equip each office with guidelines of waste sorting - organize waste sorting training for employees
Selection of business partners	<ul style="list-style-type: none"> - Inform all concerned people about new EMS action
Paper consumption	<ul style="list-style-type: none"> - select the best supplier of recycled paper, order - inform all concerned people about new EMS action
Printer toners	<ul style="list-style-type: none"> - select the best supplier (refilling cartridges) - inform all concerned people about new EMS action
Environmental education and training	<ul style="list-style-type: none"> - organize environmental education and training - subsequent evaluation

Source: own findings

The scheduling and scope of proposed actions is up to the company's management to decide. Likewise, the top management of the company is in charge of assigning responsibilities, which need to be clearly defined. Usually, EMS manager is responsible for application of assigned tasks.

It is evident, that all problems can not be solved all at once, but there is commitment to improve the system continually. The best practise would be to start now.

6.2 Environmental performance evaluation

During internal audit we found that the company does not use an established way of evaluation of the environmental performance. One of the suggestions is to apply such an evaluation tool in order to pursue the development of the environmental performance level which would enable the company to see the extent to which a particular action was effective (it can be a feedback) as well as it can enable the company to realize where it is, where it was, and where it wants to be in the future.

The following **environmental performance evaluation** is inspired by international standard ISO 14031 analyzed by Putnam (2002). The process of environmental performance evaluation involves *collecting information and measuring how effectively an organization manages its environmental aspects on an ongoing basis.*

The EPE tool is designed to provide management with reliable and verifiable information on an ongoing basis to determine whether or not its organization's environmental performance is meeting criteria it has set for itself. Crucial for this process is to identify which activities, products or services represent the largest cost saving and performance improvement opportunities.

When we want to evaluate environmental performance, we need to know how to measure it. The following table introduces relevant indicators, which can serve as a basis of environmental performance monitoring, enabling to compare whether the overall environmental performance increases with employing actions intended to improve it. EPE however can bring relevant information only after a certain period of time, in our case at least 2 quarters.

Table 6: Environmental performance indicators

Operating Performance Indicator (OPI)	Management Performance Indicator (MPI)	Environmental Condition Indicator (ECI)
Average fuel consumption of vehicle fleet (l/100 km)	Environmental costs or budget (CZK/year)	Contaminant concentration in ground- or surface water (mg/l)
Percentage of product content that can be recycled (%)	Percentage of environmental targets achieved (%)	Employees' blood arsenic levels (µg/100 ml)
Hazardous waste generated per unit of product (kg/unit)	Number of employees trained (% #trained/to be trained)	
Number of emergency events or unplanned shutdowns (#/year)	Number of complaints from public or employees (#/year)	
Hazardous waste eliminated by pollution prevention (kg/year)	Number of suppliers contacted about environmental management (#/year)	
Energy conserved (MJ)	Number of fines or violation notices (#/year)	

Table adopted by David Putnam, 2002

Environmental indicators have been reduced from the original table; just the relevant ones have been retained, because for an organization providing services many indicators are not considered to be relevant. Opposite is the true in factories where ECI can occupy substantial part of environmental performance evaluation, because these factories much more interact with environmental conditions in terms of

pollution (expressed in contaminant concentration in soil, air in mg) or biodiversity (expressed in population of specific animal species within a defined area).

Foregoing suggestions are then subject to management review. When new environmental aspects are approved in the process of management review, they need to be added into EMS documentation, list of environmental aspects should be revised and completed with new environmental aspects.

6.3 Corporate Social Responsibility policy

NeXA already runs its CSR practices, but in fact it does not call them CSR actions. NeXA strives to become a socially responsible company; however it carries out only separate activities.

The organization provides financial support to Children's homes, Craft centers, animal shelters. NeXA more closely cooperates with charity "Nadace Charty 77" focused on cultural and humanitarian activities. Although the company management does not identify CSR policy implementation (for example acc. to ISO 26000) as an objective, which would bring about positive effects, I would strongly encourage NeXA to start dealing with its CSR policy more systematically. The organization should create more comprehensive CSR policy which would include apart from the economic issues also environmental and social ones. Besides, they could consider implementing CSR ISO 26001 standard and including it into the integrated management system.

Finally, the NeXA's corporate strategy should be revised, taking into account also corporate social responsibility.

6.4 Communication as a basis of success

The final task is to communicate all intended treatments to both internal and external stakeholders. As mentioned several times, this is a crucial step if environmental improvements are to be realized successfully. This will create awareness, demonstrate commitment and put information in the hands of those who will be responsible for making improvements.

Before actions are taken, it is necessary to communicate with employees and ask them how they feel about it. In the best case, employees themselves contribute to system improvement and come with concrete recommendations. No system is functioning properly until it has overall support of those who really use it or who are affected by the action. Besides, we are dealing with improvement actions which are changing the existing system in a certain way. Very often, people do not like changes of established order. Hence, the organization should pay attention to communication from bottom up, which is essential to EMS improvement.

7 Conclusions

Although an organization can never operate without the environment, the environment might be better off without business. Connecting business with environment is therefore becoming one of the greatest tasks, nowadays. The Environmental Management System represents creative approach of a company to environment protection. A Company defines rules, which everybody in the company has to follow. This has significant preventive importance. Company needs to take necessary steps before problems arise, in order to avoid possible threats. Therefore, the EMS is changing current passive role of a company as a polluter who is not able to fulfil even legal requirements. The problems are usually transformed from one environmental area to another not only at the expense of the environment itself but also high costs. However, systematic solution can better respond to economic requirements. The EMS doesn't necessarily bring about additional costs. In the long run there are real benefits which in turn exceed costs.

The EMS creates room for new, efficient relationship between a company and public administration, for mutual constructive dialogue about existing problems and for cooperation in finding optimum solution.

Coming back to the main hypothesis of the thesis stated as: The revision of the existing EMS and proposed improvement programme will help the company mitigate their negative impact on the environment and improve overall environmental performance only if the improvement programme is applied and measured, intended treatments are communicated throughout the company, and the environmental performance is continually monitored. Several points can be concluded. First, ISO implementation itself does not ensure that overall environmental performance of an organization will be improved only if the company employed recommended actions depending solely on the company's management decision. It also depends on the way how the company implements the recommended actions and how they will be communicated through the whole company. The importance of environmental training is very often underestimated. Good environmental education and training in

the organization is crucial also for influencing employees and building strong environmental awareness.

The adoption of ISO 14001 is for an organization a rather qualified commitment to mitigate bad practices inside the organization connected to the environment. As well as in other areas of business activity, in the area of EMS there are a lot of subjects which choose the easiest way to implement the ISO 14001, which means to fulfil only the necessary legal requirements, and document the system in an appropriate form. When the EMS implementation does not belong to the organizational strategic decisions, there is no surprise that the company does only what it has to. EMS implementation can be regarded as the first step, but at the same time never the last one. Implementation of the ISO 14001 is not the end but the beginning. In other words, by the ISO 14001 certification, the organization states that it will fulfil not only legal requirements and other requirements which the organization is obligated to do anyway, but also states that it will go beyond and do more for the environment. On the other hand, behaviour of such firms is understandable to some extent. In the Czech Republic the environmental protection and corporate social responsibility of firms is not that firmly rooted in the business as it is in the case of other highly developed economies. And it may be just the matter of time when business areas will be linked not only to the economy, but also the society and the environment, expressed by means of sustainability.

One should remember companies have their own goals which tend to be different, aimed towards various activities, which are sometimes not really consistent with the idea of sustainability. On the other hand, EMS should not be regarded as a system which only requires additional costs. On the contrary, companies can gain by adopting and improving their EMS to the best possible efficiency. Among others, there is an important benefit of EMS, which is the increase of reputation. Therefore, EMS can help the company address important environmental issues connected to its activities, consequently EMS can be regarded as a way how to satisfy today's more and more exacting customer.

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Zákon o prevenci závažných havárií způsobených vybranými nebezpečnými chemickými látkami nebo chemickými přípravky (Act on prevention of accidents caused by selected dangerous chemicals) No 59/2006 Coll., available at <http://portal.gov.cz/wps/portal/>

Zákon o ochraně ovzduší (Clean Air Act) No 86/2002 Coll., available at <http://portal.gov.cz/wps/portal/>

Zákon o odpadech (Act on Waste) No 185/2001 Coll., available at <http://portal.gov.cz/wps/portal/>

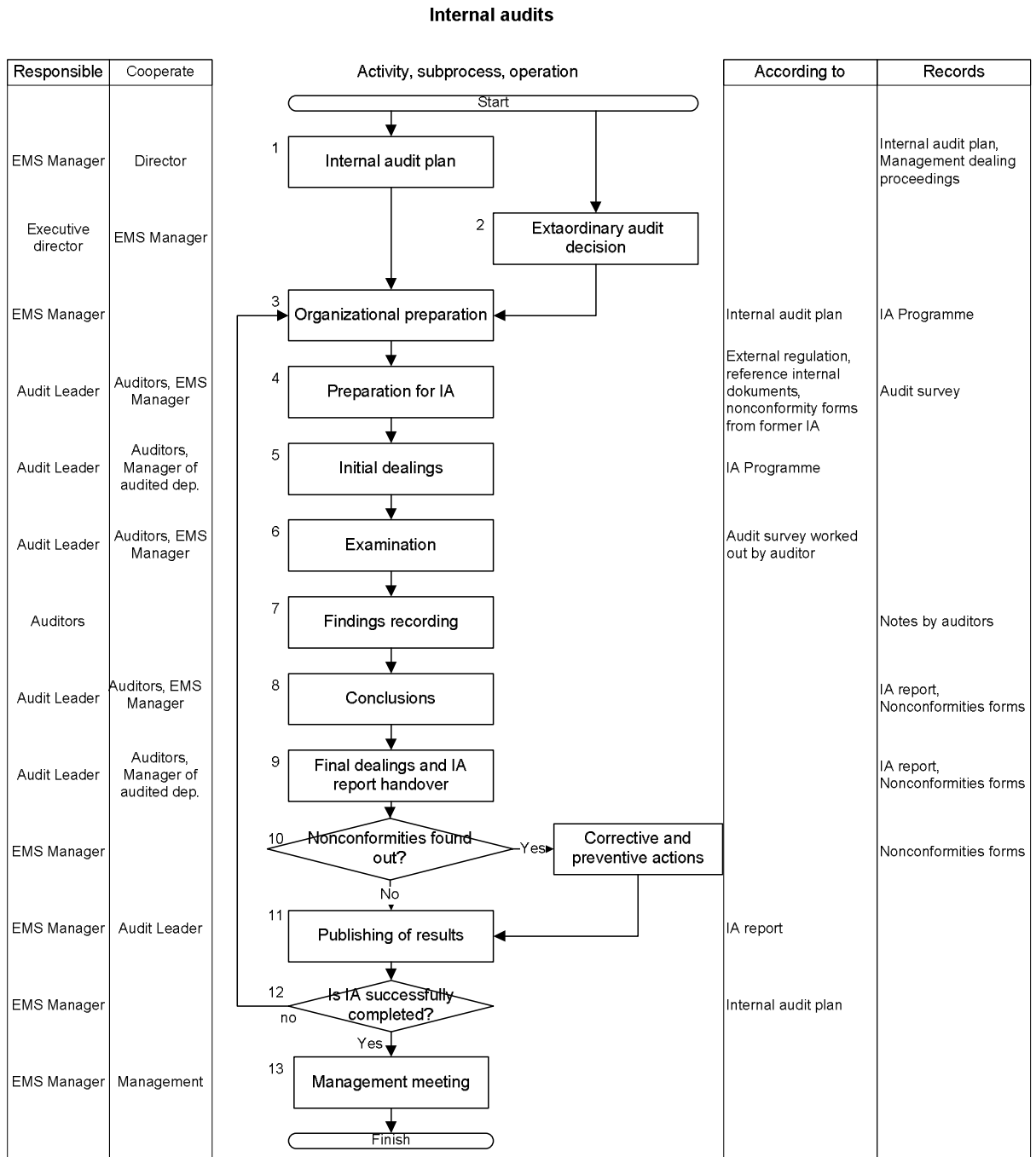
Zákon o vodách (The Water Act) 254/2001 Coll., available at <http://portal.gov.cz/wps/portal/>

Zákon o vodovodech a kanalizacích (Act on water pipes and drainage for public use) No 274/2001 Coll., available at <http://portal.gov.cz/wps/portal/>

9 Supplements

1. NeXA internal documents - Figure 6 – Internal Audits,
2. NeXA internal documents - Figure 7 – Corrective and preventive actions
3. Questionnaire –survey about drinking water

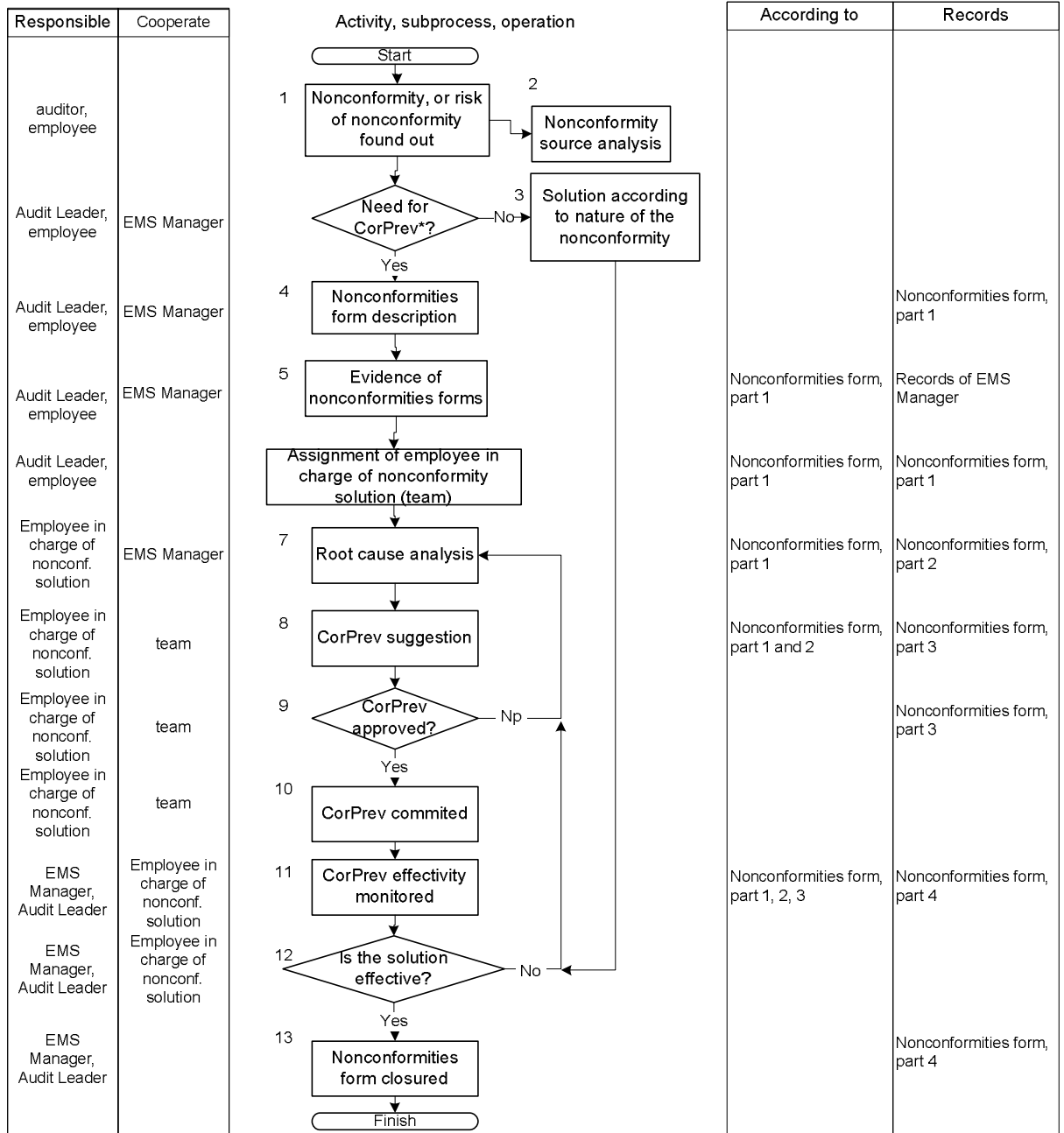
Figure 6: Internal audit process scheme



Source: internal EMS documentation, NeXA, 2008

Figure 7: Corrective and preventive actions - process scheme

Corrective and preventive actions



*) CorPrev = Corrective and Preventive action

Source: internal EMS documentation, NeXA, 2008

Survey about consumption of water

Information found out by this survey will be evaluated and on the basis of the results a decision will be made. Please, complete this questionnaire carefully, your opinion matters to us.

1. How much water (of any kind) do you drink daily?

I don't drink water	
less than one 0,3l glass a day	
One – two 0,3l glasses a day	
Three – four 0,3l glasses a day	
More than five 0,3l glasses a day	

2. What kind of water do you prefer (do you drink mostly)? Mark your favourite with 1, the second with 2, third with 3, in case that you don't drink water mark the last box.

Tap water (also for tea, coffee)	
Fontana water	
Wrapped mineral water	
I don't drink water	

3. Do you drink Fontana water?

Yes	
No	

4. If you drink Fontana water, do you use hot water tap?

Yes	
No	

5. If we installed water filter in our company, would you drink this filtered water in the same amount?

Yes	<input type="checkbox"/>
No	<input type="checkbox"/>

6. Do you have any additional comment? Please write

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