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***The General Rules of Consideration and
sustainable development - a case study of the
paint industry in Scania.***

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Abstract

The preparations for a new environmental law system in Sweden began already in 1989, but the Environmental Code entered into force the January 1, 1999. The Environmental Code should create prerequisites for sustainable development for present and future generations, and reflect the aims of the environmental policy.

The General Rules of Consideration are a new legal approach introduced in the Environmental Code. Indeed, general principles similar to the General Rules of Consideration existed in different forms and with somewhat modified significance before the Environmental Code, but to codify general principles into binding rules of action is a new legal approach. The Rules, which are based on previously general principles, are eight legally binding rules of action contained in one chapter of the Environmental Code. They apply to individuals, operators and authorities, who pursue activities or take measures that may affect the environment and human health significantly. The Rules are placed in the second chapter of the Environmental Code and constitute its material basis. They focus on how the aim and purpose of the Environmental Code should be realised i.e. sustainable development. However, the Rule of Reasonableness implies that ecological concerns should be weighed against technical means and what is economically reasonable. The Rule of Reasonableness can therefore modify the realisation of sustainable development.

Most of the General Rules of Consideration can impact paint manufacture. The production of paint is a mixing process that uses many different kinds of substances. Some of the substances are potentially harmful to the environment and human health. As a result, the production processes of the paint industry have significant environmental aspects, effects and impacts with reference to the manufacture and application of the paint.

A case study on the small to medium sized paint industries in Scania is presented in this thesis. More than half of the paint industries participating in the case study have or are aiming at being ISO 14001 certified (a type of environmental management system). These companies seem to have had more contact with the General Rules of Consideration than companies without such certifications. Several of them have included the Rules in their ISO 14001 standards. The former companies are more aware of and have a greater understanding of the Rules. The Rules have confirmed their management of environmental matters. However, these companies claim that they would have been operating according to the purpose of the Rules irrespective of the Environmental Code.

Several companies have not had any contact with the General Rules of Consideration. They cannot give an example of any of the Rules, nor do they know in what ways the Rules can affect the company. Practically none of the companies in the case study have altered their operations exclusively as a result of the General Rules of Consideration. They operate in the same manner and according to the same routines as before the Environmental Code.

The analysis of this thesis implies that the General Rules of Consideration have not had significant impact on the operations within the paint industry, neither for companies with an ISO 14001 certification, nor for companies without it. This is the fact both regarding the extent of impact of the Rules and the companies' conception of the significance of them. So far, the legislation seems to have had a confirming function of what is already going on within the paint industry.

1. Introduction

1.1 Background and statement of topic

The topic of sustainable development and the Environmental Code is a current issue. During the Rio Conference in 1992, the world took on an obligation to strive for sustainable development. In the Rio Declaration, it was determined that States should enact effective environmental legislation.¹ In Sweden, the Environmental Code entered into force the January 1, 1999.

The General Rules of Consideration² are a new legal approach introduced in the Environmental Code. Indeed, general principles similar to the General Rules of Consideration existed in different forms and with somewhat modified significance before the Environmental Code, but to codify general principles into binding rules of action is a new legal approach. The Rules are eight legally binding rules of action contained in one chapter of the Environmental Code. They apply to individuals, operators and authorities, who pursue activities or take measures that may affect the environment and human health significantly.

One of the main aims of the Environmental Code is to promote sustainable development. The Environmental Code should inter alia stimulate industrial operators' own environmental and health protective initiatives to fulfil the vision of ecologically sustainable society and thereby, as one of several tools, secure the goals of the environmental policy.³

In the world of today, industries play a major role. Hart stated in 1997 that 'the responsibility for ensuring a sustainable world falls largely on the shoulders of the world's enterprises, the economic engines of the future'.⁴ He claimed that even if companies do not have a mandate or the capabilities to deal with political and social issues, e.g. explosive population growth or rapid economic development, 'the corporations are the only organisations with the resources, the technology, the global reach, and, ultimately, the motivation to achieve sustainability'.⁵

The European Union's fifth environmental action programme 1993-2000 'Towards Sustainability' gives the industrial sector, together with four other target sectors, a key role in the striving for sustainable development. 'The industrial sector accounts for approximately 25% of the Community's wealth [...]' and has significant impacts on the environment by exploitation of natural resources, consumption of energy and generation of both pollution and wastes. It is thereby a principal cause of environmental degradation.⁶

¹United Nations, *Rio Declaration on Environment and Development*, available at <http://www.unep.org/Documents/Default.asp?DocumentID=78&ArticleID=1163>, 2000-12-17.

² This is the English translation of the Swedish term 'Hänsynsreglerna'. **For the sake of brevity, the General Rules of Consideration will often be referred to simply as the Rules.**

³ Miljödepartementet, Prop.1997/98:45 del 1, *Miljöbalk*. (Stockholm, 1997), p.160-161, and 166.

⁴ Hart, S., L., *Beyond Greening: Strategies for a Sustainable World*. Harvard Business Review. January-February 1997, p.76.

⁵ Hart, S., L., p.67.

⁶ OJ 1993, C 138/28.

'Against the background of deepening concern for the environment [...], and realisation of the negative economic effects of environmental degradation, it is now clear that environmentally sound industry is [...] a matter of necessity. It is equally clear that many sectors of the industry are themselves becoming more appreciative of their relationship with and responsibility for the environment [...].'⁷ 'Turning environmental concern into competitive advantage is one of the objectives of 'Towards Sustainability'. By aiming at reduction and elimination of pollution and at prevention, recycling and reuse of waste [...] and by creating a broader mix of instruments [...], environment policy can stimulate investment, innovation and competitiveness rather than stifle them.'⁸

This thesis pays attention to the paint industry. The production of paint is a mixing process that uses many different kinds of substances. Some of the substances are potentially harmful to the environment and human health. As a result, the production processes of the paint industry have significant environmental aspects, effects and impacts. What are the incentives for the paint industry and also other industries to pay attention to environmental and social problems and become more sustainable? Several highly motivating forces can be identified. Firstly, the political imperative e.g. stringent national environmental legislation. Secondly, the competitive imperatives i.e. market demands. Thirdly, the ethical imperative i.e. a moral responsibility and awareness of the intrinsic value of nature for its own sake. Finally, the global imperative i.e. the connection between environmental problems and economic and social development.⁹ This thesis focuses on the political/judicial imperative of stringent national environmental legislation, to be more explicit the General Rules of Consideration.

1.2. Objectives

The thesis is made up of two parts. Each part has its main objectives.

The first part is the theoretical part, which examines the underlying causes and purposes of the Environmental Code and the General Rules of Consideration. The Environmental Code and the General Rules of Consideration are the theoretical framework of this thesis. The objectives of the theoretical part are to

- investigate the underlying causes and purposes of the Environmental Code and the General Rules of Consideration.
- state the relationship between the General Rules of Consideration and the concept of sustainable development.

The second part is the case study part, which examines the significance of the General Rules of Consideration. The examination is focused on how and to what extent the General Rules of Consideration influence the operations of the paint industry. The objectives are to

- investigate the environmental aspects, effects and impacts of the operations of the paint industry and state the relationships between them and the General Rules of Consideration.

⁷ OJ C 138/28.

⁸ OJ, C 138/31.

⁹ Shrivastava, P., Hart, S., *Creating Sustainable Corporations*. Business Strategy and the Environment, Vol.4, 1995, p.156.

- investigate how and to what extent the General Rules of Consideration influence the operations of the paint industry.
- analyse the impacts of the General Rules of Consideration on the operations of the paint industry.

1.3. Scope and limitations

The focus of this thesis is on the General Rules of Consideration. For the sake of brevity, the rest of the Environmental Code will only be dealt with as an introduction and background orientation to the General Rules of Consideration. Consequently, licence procedures, liability to pay damages, criminal law issues and matters according to the European Community Law etc. are excluded from the scope of the thesis. Specific provisions and ordinances concerning chemicals, environmentally hazardous activities and working environment are also excluded from the scope for the sake of brevity.

The case study is limited to deal with small to medium sized companies with 1-249 employees in the paint industry in the region of Scania. Companies, which do not fit into these criteria, are excluded from the thesis. The idea behind the case study is that it should illustrate the small to medium sized paint industries in Scania and their relationships to the General Rules of Consideration and, consequently, the results of the case study are only valid for the companies participating in the case study. The results can by no means describe the situation within the entire Swedish paint industry. Seen in a wider perspective, the fact that a small number of companies operating in Scania participated in the case study, limits the conclusions that can be drawn about the significance of the General Rules of Consideration in Sweden.

The idea of this thesis is not to evaluate the Environmental Code and the General Rules of Consideration; it is rather to investigate the current significance of the Rules in practice by presenting a case study on the current activities of the paint industry. The case study gives an indication of the Rules significance in today's practice. However, the short time of applicability (since January, 1 1999) might influence the significance of the Rules so far. If the thesis had been written at a later point of time, the results and conclusions *maybe* would have differed.

1.4. Hypothesis

The General Rules of Consideration should serve as a tool in the efforts to achieve sustainable development. The idea to collect a number of legally binding rules of action applicable to individuals, operators and authorities, who pursue activities or take measures that may affect the environment and human health significantly, is a new legal approach. Thus, the Rules should influence a large number of individuals and operations. The thesis aims at determining whether this assumption is actually correct or unrealistic.

1.5. Methods

The method of legal science has been used in the theoretical part, which is the first step in the thesis. The theoretical part describes the General Rules of Consideration and their underlying causes. The principles of legal science and the material law have

guided the description. The law, governmental bills, reports and juridical literature have been studied. The relationships between the General Rules of Consideration and the concept of sustainable development have been examined and analysed.

A social science- and sociological method has been used for the case study. The case study is built upon theoretical studies of the production process of paint and questionnaires and interviews with people working in the paint industry. The purpose of the case study was to fully cover all small to middle-sized paint industries in a specified area. The selection of the companies in the case study was based on a list from the SCB (the Swedish National Statistical Bureau), which altogether contained twenty-one paint industries with 1-249 employees in Scania. All the twenty-one industries were asked to participate and fifteen of them did so. The interviewees were selected by contacting the employee of the company responsible for contacts with authorities in environmental matters (in most cases the environmental manager). The questionnaires and interviews have been accomplished either by phone (twelve companies), personal visits to the business sites (two companies) or by e-mail correspondence (one company). Guidelines for the formulation of the questionnaire and interviews were found in a couple of books.¹⁰ A quantitative approach with restricted answers has been used for the questionnaires, while a qualitative approach with open answers has been used for the interviews.

The method of the case study can influence the validity of the results, e.g. whether questionnaires are used and whether personal or telephone interviews are chosen. The interview situation is important since the working load of the interviewee, devoted time for the interview, prejudices about the interview topic, the degree of attention from the interviewee and the interviewer and influences from the surrounding environment can influence the outcome of the interviews and results of the case study. It is of crucial importance, therefore, that the interview is conducted with the most suitable person i.e. a person in the right position with the most knowledge and information about the interview topic. The outcome of the interviews and results of the case study can be influenced by the interviewer's questions and the questions should therefore be formulated in an unbiased way.

The method of the case study has influenced the validity of the results. There have been some problems with reaching the most suitable person at the companies for the questionnaire and interview. Main reasons seem to be lack of time and lack of interest. There have been difficulties with getting specific attention from the interviewee to the General Rules of Consideration. The interviewees tend to discuss in general about their environmentally related work, environmental management systems and authorities. Lack of professional practice and experience of this kind of investigations has probably influenced the formulation of the questionnaire and the accomplishment of the interviews.

The results of the questionnaires and interviews have been compiled and analysed in order to respond to the objectives of the second part of the thesis. A multidisciplinary thinking has been applied and material from some of the LUMES courses during the

¹⁰ Hagström, B., *Frågeteknik i utredningsarbete* (Lund: Bokförlaget Dialog, 1979). Andersson, B-E., *Som man frågar får man svar - en introduktion i intervju- och enkätteknik*. 1:st edition (Kristianstad: Rabén & Sjögren, 1992)

years 1999-2000 has been used where feasible in the thesis. System analytical thinking has brought the analysis further.

2. Theory

The theory is divided into three sections: the Environmental Code, the General Rules of Consideration and the relationships between the concept of sustainable development and the General Rules of Consideration.

2.1 The Environmental Code

2.1.1. The political setting

Sweden shall act as an international driving force and a pioneer in the efforts to achieve ecologically sustainable development.
(The 1996 Statement of Government Policy.)

The governmental policy of today seeks to combine an ecological approach with economic growth and increased employment. The challenge is to strengthen the economy, increase employment and prosperity, while at the same time achieving ecologically sustainable development. A long-term generation objective, new environmental policy goals and a new cross-sectoral approach aim at renewing the environmental policy and meet the challenge of combining economic growth, people's welfare and sustainable development.¹¹ In this context, the Environmental Code is one of many tools to promote sustainable development.

Disclosure of new kinds of environmental problems with aggregated environmental effects and changing societal development had induced the changes of the environmental policy and values of the environment. The changing nature of the environmental problems enforced more attention to lifestyles, consumption patterns and community planning. The environmental legislation system in force in the beginning of the 1990s was lacking a clear focus and conveyed the impression of a patchwork quilt. It was difficult to comprehend the multitude of differing laws and provisions, which needed to be co-ordinated. The legislation did not correspond with the new problems and values. Therefore, the legislation needed to be strengthened and harmonised with the new environmental policy and values of the environment.¹²

Preparations for a new environmental law system in Sweden had began already in 1989 when a review of the Swedish environmental legislation was initiated. In the Environmental Bill of 1991 the Government proposed to initiate a modern, co-ordinated and strengthened environmental legislation harmonised with EU law. The Swedish Parliament supported the proposal and a formal decision about reforming the environmental legislation into one single system was taken.¹³

¹¹ Miljödepartementet, Communication 1998/99:5, *Sustainable Sweden - Progress Report and New Measures for an Ecologically Sustainable Development*. (Stockholm, 1998), pp.6, 8,12.

¹² Prop.1997/98:45 del 1, pp.163-165.

¹³ Ministry of Environment, Governmental Environmental Code Commission, *The Environmental Code. Focused and Co-ordinated Environmental legislation for Sustainable Development. A Brief Background To and Overview of, the Report SOU 1996:103*. English version. (Stockholm: Fritzes, 1996), p.15.

Accordingly, the Swedish environmental legislation system has been changed systematically and to some extent materially by the adoption of the Environmental Code. The focus of the legislation has been transformed into a combination of both environment and human health. In this sense, the Environmental Code involves a thorough modernisation of former existing legislation. The design of the new environmental law system in the form of a Code signals the important significance and scope of the Environmental Code. The Environmental Code should be looked upon as a fundamental and central tool for the development of environmental work in Sweden with emphasises on precautionary measures.¹⁴

The Environmental Code is based upon a number of main ideas, namely¹⁵:

- Strengthening of the protection of the environment and human health.
- Co-ordination of the legislation concerning environment, health and resources.
- Creation of prerequisites for integrated implementation (e.g. the legislation should stimulate operators to precede the demands of the legislation).
- Emphasis on General Rules of Consideration applicable to 'each and everyone'.
- Emphasis on resource management and eco-cycle principles.
- Strengthening of democratic influence in environmental and health issues.

The principal of sectoral responsibility is also an underlying principle of the Environmental Code. It implies a responsibility for each sector of the society to promote and implement measures to achieve sustainable development. Each sector has to take into consideration environmental concerns and resource management into its operations.¹⁶ A prerequisite for sustainable development is that the work within the sectors is co-ordinated and strives in the same direction. It is, besides, a long-term process to integrate environmental concerns in all sectors of the society. Environmental legislation can be one method to integrate environmental concerns in sectors of the society.

2.1.2. The structure of the environmental policy

The environmental legislation should reflect comprehensive environmental goals, e.g. ecologically sustainable development, and aim in the same direction as the goals. In order to facilitate a realisation of comprehensive environmental policy goals, the goals have to be operationalised into interim targets and rules of action. This implies that comprehensive environmental policy goals need to be transformed into something more concrete e.g. environmental legislation, environmental quality goals and rules of action. Comprehensive environmental policy goals, environmental legislation and environmental quality goals should be linked up.¹⁷

¹⁴ Miljödepartementet, SOU 1996:103 del 1-2 huvudbetänkande av miljöbalksutredningen, *Miljöbalken - en skärpt och samordnad miljölagstiftning för en hållbar utveckling*. (Stockholm:Fritzes, 1996), pp.191 ff. Prop.1997/98:45 del 1, p.154, 164, 168-170. Rubenson, S., *Miljöbalken. Den nya miljörätten*. 2:nd edition (Stockholm: Norstedts Juridik AB,1999) p.16.

¹⁵ Prop.1997/98:45 del 1,pp.168-169.

¹⁶ Miljödepartementet, Communication 1999/2000:13, *Sustainable Sweden - a Progress report on Measures Promoting Ecologically Sustainable Development*. (Stockholm, 1999), pp.9-10, 13.

¹⁷ Westerlund, S., *En hållbar rättsordning - rättsvetenskapliga paradigmer och tankeväндor*. (Uppsala: Iustus Förlag, 1997) pp.22, 29, 41-51, 53, 59, 78-79.

The idea is to adapt the environmental legislation to current developments within the society and to environmental problems of today.¹⁸ Accordingly, the Environmental Code should reflect the aims of the environmental policy and guide the environmental work towards set environmental quality goals.

In 1998, the Government suggested a new structure for the work with environmental quality goals. The result was that the Parliament should set environmental quality goals, while the Government should set interim targets. According to the new structure, each sector should then decide its own methods to achieve the set goals and results.¹⁹ The new structure functions as follows:



Figure 1. The new structure for the work with environmental quality goals. Source: Miljödepartementet, Prop.1997/98:145, *Svenska miljömål, Miljöpolitik för ett hållbart Sverige*. (Stockholm, 1998), pp.33-39.

The Environmental Code can operationalise *non-binding* environmental quality goals into binding rules of action. Environmental quality goals can for example serve as kind of basis for interpretation and application of the Environmental Code. Thus, efficient implementation of the Environmental Code is fundamental for realisation of environmental quality goals.²⁰ Relationships between the Environmental Code and environmental quality goals exist at several levels, which is illustrated in figure 2.

¹⁸ Prop.1997/98:45 del 1, pp.168-169.

¹⁹ Miljödepartementet, Prop.1997/98:145, *Svenska miljömål, Miljöpolitik för ett hållbart Sverige*. (Stockholm, 1998), pp.33-39.

²⁰ Miljödepartementet, SOU 2000:52, del 1-2, betänkande från miljömålskommittén, *Framtidens miljö - allas vårt ansvar!*. (Stockholm: Fritzes, 2000), pp.26, 113, 126, 679.

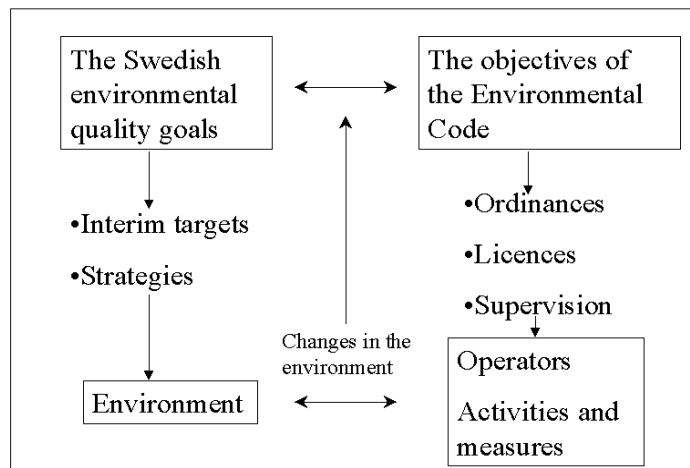


Figure 2. The relationships between the Environmental Code and environmental quality goals. Source: Miljöbalksutbildningen, *Översikt kurs Miljöbalkens historik och grunder*, available at <http://www.miljobalksutbildningen.gov.se/>, 2000-12-17.

Environmental quality goals define the future environmental status that is to be attained within a generation.²¹ The environmental quality goals rest on five basic values: human health, biodiversity, the cultural environment, natural resources and nature.²² In other words, the environmental quality goals describe the state of the environment that correspond to sustainable development.

Green indicators function as indicators of society's transformation and conversion towards sustainability. The green indicators measure the state of the environment, reflect environmental problems and their underlying causes and measure important parties' transformation towards sustainability. They are part of a system for follow-up of the progress made in the transformation and conversion towards the sustainable society. The idea is that the green indicators should be a comprehensible source of information about the transformation and conversion process, constitute a basis for political decisions and strategies and contribute to a debate about the ecologically sustainable society.²³

There are fifteen environmental quality goals and eleven green indicators.²⁴ The environmental quality goals and the green indicators are matched in groups and relate

²¹ Within a generation is defined as about year 2020-2025 see Prop.1997/98:145, p.19

²² SOU 2000:52, del 1-2, pp.102-103.

²³ Miljödepartementet, SOU 1998:170, betänkande av Miljövårdsberedningen, *Gröna nyckeltal för en ekologiskt hållbar utveckling*. (Stockholm: Fritzes, 1999), p.19. SOU 1999:127, p.5.

²⁴ The environmental quality goals are limitation of climate change, natural acidification only, safe radiation environment, good-quality groundwater, good built environment, poison free environment, healthy growing forests, healthy lakes and streams, zero eutrophication, balanced marine environment and sustainable coasts and archipelagos, clean air, wetlands teeming with life, flourishing agricultural landscape, majestic mountain world and protective ozone layer. The green indicators are use of energy, use of material, use of chemicals, global warming, eutrophication, air quality in populated areas, biodiversity, environmentally adjusted means of travel, cycling of nutrients, environmentally adjusted purchase, environmentally adjusted method of working (e.g. EMAS and ISO 14001). See SOU 1999:127 p.22.

to each other. For example, the use of chemicals (=green indicator) is matched with poison free environment and good quality groundwater (=two environmental quality goals). Another example is environmentally sound methods of working e.g. environmental management systems (=green indicator), which has indirect connections to several of the environmental quality goals.²⁵

2.1.3. Sustainable development and the Environmental Code

Thinking 'reflectively' the concept of sustainable development existed already during the 1960s in the environmental debate in Sweden. At that time, knowledge of ecological principles, relationships between organisms and their environment and interactions among organisms, populations, communities, ecosystems and ecosphere increased and deepened. People started to become aware of the Earth's limitations to support the human well-being and ideas of failing resource bases took shape. Human's responsibility got attention and ideas of stewardship and ecological sustainability was given birth.²⁶

The concept of sustainable development, yet, were officially recognised by the Brundtland Report 'Our Common Future', in which sustainable development was defined as 'development that meets the needs of the present without compromising the ability of future generation to meet their own needs'.²⁷

The Environmental Code aims at promoting sustainable development in Sweden. In the EC 1:1 it is stated that:

The purpose of this Code is to promote sustainable development, which will assure a healthy and sound environment for present and future generations. Such development will be based on recognition of the fact that nature is worthy of protection and that our right to modify and exploit nature carries with it a responsibility for wise management of natural resources. The Environmental Code shall be applied in such a way as to ensure that:

1. human health and the environment are protected against damage and detriment, whether caused by pollutants or other impacts;
2. valuable natural and cultural environments are protected and preserved;
3. biological diversity is preserved;
4. the use of land, water and the physical environment in general is such as to secure a long term good management in ecological, social, cultural and economic terms; and
5. reuse and recycling, as well as other management of materials, raw materials and energy are encouraged with a view to establishing and maintaining natural cycles.

However, the realisation of the purpose of the Environmental Code can be modified by the Rule of Reasonableness. The General Rules of Consideration are the material basis of the Environmental Code. The Rule of Reasonableness limits the scope of almost all of the other General Rules of Consideration (the Liability to Remedy Damage and the Stop Rule are *excepted*). The Rule of Reasonableness implies that ecological concerns should be weighed against technical means and what is

²⁵ SOU 1999:127 p.22.

²⁶ Westerlund, S., 1997, pp.33, 98, 100. Westerlund, S., *Aktuell miljörettssteori - utveckling och problem* p.14, available at <http://www.imir.com> 2001-01-06.

²⁷ World Commission on Environment and Development (WCED), *Our Common Future*. (Oxford: Oxford University Press, 1987) p.43.

economically reasonable in each specific case. This Rule can therefore modify the realisation of sustainable development

The Environmental Code shall be one of many tools to restrict environmental pollution and other harmful effects on the environment and human health and create prerequisites for sustainable development to the benefit of present and future generations.²⁸ The Environmental Code contains provisions for continuous protection and active measures for the benefit of the environment and human health. The two types of provisions shall together stop the environmental pollution and secure a long-term sustainable management of land, water, natural resources and energy.²⁹

The approach of the Environmental Code concurs with the approach of the World Commission on Environment and Development. It is emphasised that a fundamental prerequisite for sustainable development is that the life-supporting natural systems of the earth - atmosphere, water, land and organisms - are not threatened.³⁰ The earth is a closed system, which is maintained by energy flow and matter cycling. On the other hand, processes of energy flow and matter flow maintain the lives of individual organisms (open system). Accordingly, three interconnected factors sustain life on earth: one-way flow of high-quality (usable) energy from the sun, cycling of matter of nutrients through parts of the ecosphere and gravity.³¹

Even though the Brundtland definition of sustainable development comprises ecological, economic and social dimensions, the government emphasised the ecological dimension during the preparations for the Environmental Code and accordingly, the focus is laid on the aspiration for ecologically sustainable development. However, it is stated that a successful ecologically sustainable development presupposes the promotion of socially and economically sustainable development as well.³²

The Government defines *ecologically* sustainable development by setting three interconnected and mutually supportive headline objectives, which embody the prerequisites for such a development.³³

- The first headline objective is protection of the environment, which can be put in relation to the EC 1:1 section 2, 1-3. It implies that pollution must not harm the human health or exceed the nature's carrying capacity. Natural cycling, biodiversity and valuable cultural environments must be protected. The protection of the environment must have a long-term perspective.
- The second headline objective is efficient use of resources, which can be connected to the EC1:1 section 2, 4-5. It is pointed out that use of land, water,

²⁸ Prop. 1997/98:45, del 1, pp.164-166, del 2-3, pp.7-8.

²⁹ SOU 1996:103, del 2, pp.7-9.

³⁰ SOU 1996:103, del 1, pp.224-225.

³¹ Miller, G. T., *Living in the Environment. Principles, Connections and Solutions*. 11:th edition (Pacific Grove California: Brooks/Cole Publishing Company, 1999), pp.85-86.

³² Miljödepartementet, Communication 1999/2000:13, *Sustainable Sweden - a Progress report on Measures Promoting Ecologically Sustainable Development*. (Stockholm, 1999), pp.4-5.

³³ Communication 1999/2000:13, pp.6-7. Miljödepartementet, Communication 1998/99:5, pp.6-9. Miljödepartementet, Regeringens skrivelse 1997/98:13, *Ekologisk hållbarhet*. (Sundsvall, 1997), pp.8-10.

natural resources, energy and material-flows must be efficient from ecological, social, cultural and socio-economical viewpoints. Patterns of production, distribution, communication and consumption have to be changed. Community planning, technological development and investments must aim at resource efficient products and processes.

- The last headline objective is about sustainable supplies. It has a relation to the EC 1:1 section 2, 4-5. It emphasizes that management of land, water, natural resources and energy as well as community planning must secure the material foundation for the survival and welfare of present and future generations. The long-term production capacity of ecosystems have to be secured i.e. the use of land, water, natural resources and energy must not be allowed to exceed the carrying capacity of ecosystems in a long-term perspective. Cycling and the use of renewable resources must be prioritised.

'The strategy is to achieve these goals [the three headline objectives for ecologically sustainable development; own comment] without neglecting the economical and social dimensions. On the contrary, the economy, employment and social welfare will be favoured by this adjustment.'³⁴ When creating a sustainable society, economical development and improved social welfare should include protection of the environment and the management of natural resources. Above all, community planning has a key role in the development of a sustainable society, because management of land, water, natural resources and energy has ecological, societal, cultural and socio-economical aspects.³⁵

2.1.4. Applicability of the Environmental Code

The Environmental Code applies in principal to all human activities and measures that may have significant effects on the environment and human health and counteract the objectives of the Environmental Code set out in the EC 1:1. The *risk alone* of damages, nuisances³⁶ and harmful effects is enough for the applicability of the Environmental Code. In general, the provisions themselves indicate the scope of the Environmental Code by their content and purpose.³⁷

The Environmental Code and the General Rules of Consideration apply to all activities and measures, *except* those of negligible significance with regard to the aim and purpose of the Environmental Code. The concept of activity should not be interpreted literally. It comprises active and passive acts as well as failure to act. The vital point is if the activity may counteract the aim and purpose of the Environmental Code. Therefore, handling of products, management of industrial sites and operations and other measures with a potential to counteract the aim and purpose of the

³⁴ Miljödepartementet, Communication 1998/99:5, p.5

³⁵ Prop. 1997/98:45, del 1, p.156, 244.

³⁶ The concept of nuisance is defined in the EC 9:3.

³⁷ Ministry of Environment, Governmental Environmental Code Commission, p.20. SOU 1996:103, del 1, p.230. The Governmental Office, Ministry of Environment, The Environmental Code - a Summary of the Government Bill on the Environmental Code (1997/98:45). (Ministry of Environment, 1998), p.2-3. Rubenson, S., p.20. Specific provisions about the scope of applicability within certain subject fields can be found in the EC 1:2-7.

Environmental Code are included in the concept. Ordinances, directions, probation of licenses and supervision, i.e. acts of the authorities, are also a form of activities.³⁸

The concept of negligible significance implies that the Environmental Code and the General Rules of Consideration apply to activities or measures, which are capable of having significant harmful effects on the environment and human health. Activities or measures, which have marginal effects on the environment and human health with regard to their characters as well as marginal effects with regard to the aim and purpose of the Environmental Code, cannot within the limits of reasonableness be regarded as having negligible significance. The character of the activities or measures as such, the number of times they are taken, the number of people who takes them etc. have to be considered in the assessment of the significance. Environmental interests and other interests such as personal freedom of choice are also of relevance. An assessment of the significance has to be done in every individual case according to the balance of reasonableness.³⁹ A balance of reasonableness according to the Rule of Reasonableness comes into question when applying all of the Rules *except* for the Liability to Remedy Damage and the Stop Rule.

The Environmental Code should be applied in parallel with other laws if the other laws regulate issues included in the scope of the Environmental Code but deal with other aspects. Authorities' probation of licences follows this principal rule only if it is explicitly stated in the relevant legislation in question. The General Rules of Consideration apply also to activities regulated in other legislation, if no exception has been stated. The idea behind this is that the Rules should set a minimum standard.⁴⁰

2.2 The General Rules of Consideration

2.2.1. Introduction

The General Rules of Consideration are a new legal approach introduced in the Environmental Code. Indeed, general principles similar to the General Rules of Consideration existed before the Environmental Code in different forms and with more or less modified significance, but to codify general principles into binding rules of action is a new legal approach. The relationships between the Rules and similar provisions in previous legislation in force are shown in table 1.

³⁸ SOU 1996:103, p.13. Prop. 1997/98:45 del 1, p.207.

³⁹ Prop.1997/98:45 del 1, pp.204-207,Bilaga 1 Lagrådets yttrande p.455-456, del 2, p.13

⁴⁰ Bengtsson, B., Bjällås, U., Rubenson S., Strömberg R., *Miljöbalken. En kommentar. 1-15 kap.* (Stockholm: Norstedts Juridik AB, 2000) pp. 1:9, 2:3-4.

Table 1. The relationships between the General Rules of Consideration and similar provisions in previous legislation in force. Source: Rubenson, S., *Miljöbalken. Den nya miljöretten*. 2:nd edition (Stockholm: Norstedts Juridik AB, 1999) p.271.

The Demand for Knowledge - the EC 2:2 is similar to:	the Chemical Products Act §7 and the Nature Conservancy Act §3, section 1.
The Precautionary Principle - the EC 2:3 is similar to:	the Environmental Protection Act §5, section 1-2, §3, section 1, the Health Protection Act §6, the Water Act 17:2 and 19:1, section 1, the Chemical Products Act §5, section 1, the Nature Conservancy Act §1, section 3, the Environmental Damage Act §2, the Biological Pesticides (Advanced Testing) Act §6, the Genetically Modified Organisms Act §4, 7 and the Agricultural Land Management Act §6a.
The Localisation Principle - the EC 2:4 is similar to:	the Environmental Protection Act §4 and the Nature Conservancy Act §3, section 1.
The Resource Management and Eco-cycle Principles - the EC 2:5 is similar to:	the Public Cleansing Act §2a and the Nature Conservancy Act §3, section 1.
The Product Choice Principle - the EC 2:6 is similar to:	the Chemical Products Act §5, section 1 and the Nature Conservancy Act §3, section 1.
The Rule of Reasonableness - the EC 2:7 is similar to:	the Environmental Protection Act §5, section 3, the Nature Conservancy Act §3, section 1 and the Water Act 3:7.
The Liability to Remedy Damage - the EC 2:8 is similar to:	the Environmental Protection Act §5, section 1 and the Water Act 15:10.
The Stop Rule - the EC 2:9-10 is similar to:	the Environmental Protection Act §6 and the Water Act 3:3, section 1-2.

The General Rules of Consideration are eight legally binding rules of action contained in the second chapter of the Environmental Code. They constitute the material basis of the Environmental Code and focus on how the aim and purpose of the Environmental Code should be realised i.e. sustainable development. In other words, the Rules should be applied so that the aim and purpose in the EC 1:1 can be realised.⁴¹ However, the Rule of Reasonableness is of special importance, because it can modify the realisation of sustainable development. This Rule implies that ecological concerns should be weighed against technical means and what is economically reasonable and this can affect the demands of the law.

The keystone of the General Rules of Consideration is the concept of precautionary measures, which is supplemented by the reversed burden of proof (the EC 2:1). Thus, everybody, who carries on activities or plans to do so, are bound to show their observance of the legal provisions of the EC 2:, unless the activities are of negligible significance.

The General Rules of Consideration may constitute basis for ordinances, directions, guidelines and norms of action, probation of licenses, (e.g. conditions and exceptions) as well as for supervision, intervention, injunctions and prohibitions. Figure 3 gives a schematic explanation.

⁴¹ Bengtsson, B., Bjällås, U., Rubenson S., Strömberg R., pp. 2:2-9.

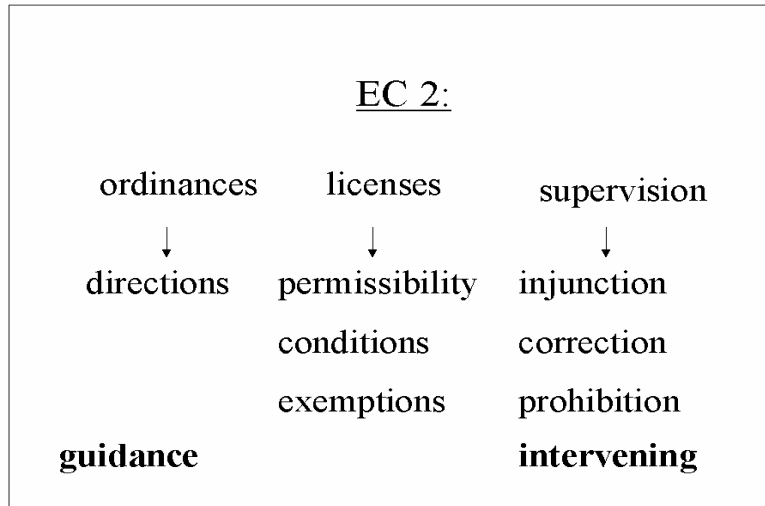


Figure 3. A schematic explanation of the EC 2: as a basis for ordinances, licences and supervision.

A supervisory authority has legal support (the EC 26:9) for intervening against an activity, operating with or without licence. The supervisory authority may claim that the operator must operate according to the General Rules of Consideration.⁴² However, a licence has legal force in matters dealt with in the licence. Consequently, the authorities cannot claim that the operator should do more in these matters than decided in the licence. On the other hand, the General Rules of Consideration have to be complied with in matters not regulated by the licence.⁴³

2.2.2. Definition of the General Rules of Consideration

This entire section is based upon the legal sources SOU 1996:103, del 1, pp.233-259, del 2, pp.19-37. Prop. 1997/98:45, del 1, pp.201-239, del 2, pp.12-28 and Bengtsson, B., Bjällås, U., Rubenson S., Strömberg R., *Miljöbalken. En kommentar. 1-15 kap.* (Stockholm: Norstedts Juridik AB, 2000) pp2:1-43.

The Demand for Knowledge - the EC 2:2

The Demand for Knowledge implies that everybody commencing or conducting activities of importance for the aim of the Environmental Code should acquire the necessary knowledge to determine the environmentally harmful effects of the activities and the possibilities to restrict, avoid or prevent such effects. Thus, it is the *possible effects* of activities - not the activities or the operators as such - that determine the necessary knowledge. The demands may therefore differ dependent on the character and proportion of the activities and the probability of harmful consequences on the environment and human health.

The Precautionary Principle - the EC 2:3

The Precautionary Principle, which is closely connected with Polluter Pays Principle (PPP)⁴⁴ and reversed burden of proof, states that possible damages and nuisances⁴⁵ on

⁴² Prop. 1997/98:45, del.1, p.595.

⁴³ The EC 24:1 section 1 sentence 1. SOU 1996:103 del 2, p.19. Prop. 1997/98:45 del 1, p.207.

⁴⁴ Polluters' liability for damages.

the environment and human health should be restricted, avoided and prevented. Effluents, emissions, contamination, pollution, impoverishment and mismanagement of the environment etc. as well as physical and mental damages and nuisances on human health are embraced. The assessment should be based on humans' perception and understanding of the damage and nuisance in general. The assessment should further take into consideration the danger and proportion of damages or nuisances and their effects. Consequently, an assessment must be done in every specific case. Precautionary measures shall be taken *as soon as there is reason to assume* that activities or measures may lead to damages or nuisances on the environment or human health or in another way counteract the aim and purpose of the Environmental Code; the *risk alone* is enough. Lack of complete proof of causality between causes and effects is no excuse for not taking precautionary measures. Instead, all precautionary measures should be taken that are reasonable and meaningful to restrict, avoid or prevent harmful effects of activities or measures. Thus, the application of the Precautionary Principle is submitted to the Rule of Reasonableness. Examples of precautionary measures and conditions may concern technical measures, running procedures of operations, use of raw materials and delivering of information.

The best possible technology (BPT) principle⁴⁶ is a supplementary principle to the Precautionary Principle. The BPT principle is only applicable to commercial operations. The technology has to be industrially available and feasible to apply from a technical and financial viewpoint. The concept of technology includes both the applied technology as well as the construction, design, maintenance, management and closing down of a plant. Moreover, adopted methods for management of work and education are also included. Thus, the BPT Principle involves the whole performance of a company. The environment as a whole is the crucial factor when assessing the best possible technology and the choice of the best possible technology should be based on intentions to restrict, avoid or prevent harmful environmental effects.

The Localisation Principle - the EC 2:4

The Localisation Principle is applicable to not yet commencing activities and activities, which are to be changed. The location for an activity, which is not performed just temporarily, should be suitable with regard to the aim and purpose of the Environmental Code and the specific provisions about management of land and water resources, environmental quality norms and impact assessments (the EC 3:, 4:, 5:, 6:). In this sense, the Localisation Principle combines environmental and management matters. The purpose of an activity has to be possible to attain, but at all events with the least intrusion and nuisance to the environment and human health. Thence, it follows that the Localisation Principle is connected with the Precautionary Principle.

The Resource Management and Eco-cycle Principles - the EC 2:5

The Resource Management and Eco-cycle Principles aim at achieving a society that manages resources in an environmentally sound and sustainable manner. The Resource Management and Eco-cycle Principles emphasise the need for efficient

⁴⁵ The concept of nuisance is defined in the EC 9:3.

⁴⁶ The best possible technology (BPT) principle is sometimes referred to as the best available technology (BAT) principle. In general, the BPT should be stricter than the BAT.

energy- and raw material production and use and encourage conservation, re-use, recycling, energy extraction and final disposal. It is explicitly stated in the EC 2:5 that renewable sources of energy should be utilised in the first instance. Non natural organic substances and poisonous heavy metals should not be brought to nature, but merely be used in closed loop systems. It is the producer's responsibility to assess the environmental aspects of a product and to make sure that the product is environmentally sound i.e. not harmful to the environment and human health.⁴⁷ If issues counteract, the overall best option according to resource management views and the aim and purpose of the Environmental Code should be preferred.

The Product Choice Principle - the EC 2:6

The Product Choice Principle is a guiding principle in choice situations. It is not a prohibition rule. The Product Choice Principle is applicable when using and selling potentially harmful chemical products, biotechnical organisms or products, which contain or have been treated with chemicals and/or biotechnical organisms⁴⁸. Users and sellers of such potentially harmful products are bound to avoid or replace them by other products, which are assumed to be less harmful to the environment and human health. However, the existence of another approved product on the market is a prerequisite. Assessments of the possible risks of products have to be done continuously and in every individual case. The intrinsic property of the product as such should be the crucial factor. When comparing different alternatives, the direct effects of the chemical or biotechnical organism on the environment and human health should be the determining factor. Breach of the Product Choice Principle can be punished as environmentally hazardous handling of chemicals (the EC 29:3).

The Rule of Reasonableness - the EC 2:7

In principle, demands should be set on operators to secure a purposeful fulfilment of the aim and purpose of the Environmental Code. However, the demands must not be set so high that the activity will become considerably more difficult to perform. The Rule of Reasonableness limits the scope of almost all the other General Rules of Consideration (*not* the Liability to Remedy Damage and the Stop Rule). The Rule of Reasonableness deals with considerations of ecological, technical, economical factors and implies that ecological concerns should be weighed against technical means and what is economically reasonable in each specific case. The Rule of Reasonableness can therefore relieve demands of the law and modify the realisation of sustainable development.

The circumstances in every individual case will have to be investigated. In the assessment of the reasonableness, a cost-benefit analysis should be utilised. Marginal benefits for the environment and human health should exceed the marginal costs of precautionary measures. Nevertheless, in no case may environmental quality norms be neglected.

⁴⁷ See further the EC 15: about producer responsibility.

⁴⁸ Specific provisions for chemical products and biotechnical organisms can be found in the EC 14:.

Table 2. Compilation and interpretation of possible costs and benefits of precautionary measures relevant in the assessment of their reasonableness.

The costs of precautionary measures	The benefits of precautionary measures
<ul style="list-style-type: none"> • Direct costs. • Default of income/profit. <p>The costs have to be motivated from an environmental perspective and according to the environmental benefits.</p> <p>The costs may not be regarded as economically unreasonable - according to the standards of the specific business.</p>	<ul style="list-style-type: none"> • The risk of damages or nuisances. • The significance of damages or nuisances on the environment and human health. • The character and magnitude of the damages or nuisances. • The level of sensitivity in the specific area. • The degree of sensitivity among the people exposed. • The extent to which it is possible to prevent or restrict damages and nuisances. <p>Environmental quality goals and environmental quality norms should have particular importance in the assessment of the benefits.</p>

Operators have to prove that it has to be assumed unreasonable to fulfil the demands of the General Rules of Consideration (reversed burden of proof). Otherwise, they have to comply with the Rules. In other words, operators have to comply with the Rules when it cannot be assumed unreasonable. An assessment of the reasonableness should, above all, deal with a comparison between environmental benefits and costs of precautionary measures.

The Liability to Remedy Damage - the EC 2:8

The Polluter Pays Principle (PPP) has influenced the Liability to Remedy Damage, which concern damages and nuisances caused by pollution. The person, who conducted the activities or caused the nuisances, should be liable to remedy them. The liability is valid for commercial as well as private activities and remains until the damages or nuisances have ceased. Consequently, the liability remains even if the operations have been conveyed to another operator. Measures should be taken to retain an acceptable environment. However, the remedy does not necessarily have to be a direct practical action. It can also be in the form of liability to finance the costs of the remedy, but then the most cost-effective alternative should be chosen.

The Liability to Remedy Damage is excepted from the application of the Rule of Reasonableness. The scope of the liability should instead be determined according to the EC 10:. Shortly, a clean up, which is technically feasible and economically and environmentally reasonable in view of what a typical company in the business can bear, has to be done.

The Stop Rule - the EC 2:9-10

The Stop Rule functions as a last resort. It sets the absolute limit for the lowest acceptable level required for the protection of the environment and human health and the highest acceptable level of damages and nuisances. The level has an absolute purport, which cannot be affected by the purpose of activities or measures. It is very important to observe that the Stop Rule is appropriate to use after all precautionary measures have been taken according to the other General Rules of Consideration and the Rule of Reasonableness has been applied. Thus, the aim of the Stop Rule is to fix when exceptions can be made from the provisions of the Environmental Code and thereby ensure that no activities or measures are undertaken with unacceptable consequences. The Stop Rule is complemented by environmental quality norms, which set the lowest acceptable level within a specified geographical area.

The Stop Rule should be applied when there is a risk that the absolute limit will be exceeded. The risk for damages or nuisances has to be predictable with some probability and be of some significance. E.g. if nuisances are commonly occurring in the country, they are normally considered as nuisances of negligible significance.

The EC 2:9 section 1 implies that damages and nuisances should be weighed against the public welfare. Activities or measures may only be carried through, if there are particular reasons. The advantages shall then clearly outweigh the damages and nuisances of the activities or measures from a public and individual viewpoint. The EC 2:9 section 2 concerns more serious situations, when the living conditions of a large number of people is substantially deteriorated or the environment is significantly deteriorated (the state of the environment locally as well as the development of the state of the environment overall). Only the government can except a part from the Stop Rule in a situation like this. The EC 2:9 section 3 is about exceptions to section 1 and 2.

The EC 2:10 section 1 states that if activities or measures are of extraordinary importance from a public viewpoint (e.g. employment), they may be excepted in spite of the EC 2:9 section 2. However, an exception can only be made, if the benefits clearly outweigh the disadvantages. An exception is never possible, if activities or measures are feared to deteriorate the public health generally. The EC 2:10 section 2 states that decisions according to section 1 may be combined with conditions.

2.3 Summary of relationships between the concept of sustainable development and the General Rules of Consideration

A thinking 'reflectively' the concept of sustainable development existed already in the 1960s in the environmental debate in Sweden. However, an official definition of sustainable development came more or less with the Brundtland Report 'Our Common Future' in 1987, in which sustainable development was determined to consist of three dimensions: the social, economic and ecological dimensions. The Swedish environmental policy has given special attention to the ecological dimension, which is based upon three headline objectives: protection of the environment, efficient use of resources and sustainable supplies (see the purple squares in figure 4.).

The Swedish politicians have set up comprehensive objectives for the environmental policy e.g. ecologically sustainable development. These objectives are basis for environmental quality goals, interim targets and green indicators. The Environmental Code should reflect the aims of the environmental policy and guide the environmental work towards the objectives of the environmental policy and set environmental quality goals.

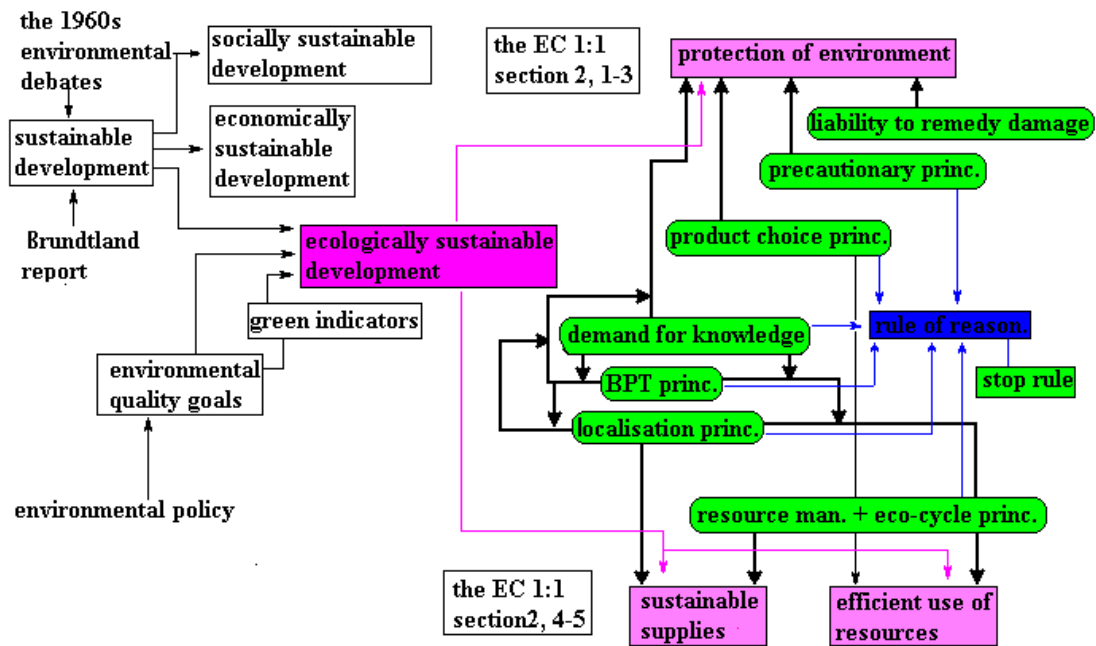


Figure 4. Web of relationships between environmental policy, environmental quality goals, green indicators, concept of sustainable development, comprehensive environmental policy and the General Rules of Consideration.

The aim and purpose of the Environmental Code as well as the General Rules of Consideration (see the green and blue squares in figure 4.) is related to sustainable development and the governmental definition of ecologically sustainable development.⁴⁹

More specifically, the Precautionary Principle, the Liability to Remedy Damage and the Product Choice Principle aim to protect the environment. The Product Choice Principle may also to some extent aim towards efficient use of resources. The Demand for Knowledge, the best possible technology principle (BPT principle) and the Localisation Principle deal with protection of the environment, efficient use of resources as well as sustainable supplies. The Resource Management and Eco-cycle Principles aim to achieve an efficient use of resources and sustainable supplies. The Rule of Reasonableness (see the blue square in figure 4.) limits the scope of almost all of the General Rules of Consideration (*the Liability to Remedy Damage and the Stop Rule are excepted*). It implies that ecological concerns should be weighed against technical means and what is economically reasonable in each specific case. The Rule of Reasonableness can therefore modify the realisation of sustainable development.

⁴⁹ See the EC 1:1 section 2, 1-3 → protection of the environment and the EC 1:1 section 2, 4-5 → efficient use of resources and sustainable supplies.

The Stop Rule becomes relevant only after the application of all of the Rules, including the Rule of Reasonableness.

3. Case study

The case study consists of two main components: theoretical studies of the paint manufacture and results of the questionnaire and interviews with people working in the paint industry.

3.1. The manufacturing process of paints

The basic components when manufacturing paints are pigments, binders, solvents (or thinners) and additives. Since paint manufacture is a mixing process, the mixture of the components is extremely important. Thus, different types of paints can be manufactured dependent on the specific amount and type of components added to the mixture during the production process. There are two main products, namely waterborne and solvent-based paints. The waterborne paint is an aqueous suspension of finely ground polymers. The solvent-based paint, however, is a true solution in solvents.⁵⁰ Consequently, the difference between the waterborne and the solvent-based paints is the chemistry of their binders.

The production process of the two products is similar, but differs in the chemistry of the binders and the sequence of the material addition (see figure 5.). When manufacturing solvent-based paint resins, dry pigment and pigment extenders are mixed together with solvents and plasticizers in a high-speed mixer. Before, the ingredients are measured to get the precise quality requirement. Next, additional grinding and mixing in a mill of the batch occurs. Then, the batch is transferred to an agitated tank for addition of tints, thinner and the balance of the resin. At this stage the mixture gets its distinctive properties. Samples are taken to control the quality of the paint. Subsequently, the paint is filtered to remove any non-dispersed pigment. The paint is finally transferred to a loading hopper from where the paint is canned, labeled, packed and moved to storage.⁵¹

⁵⁰ Young, S. J., Ambrose, L., Lobo, L. (1994). *Stirring Up Innovation Environmental Improvements in Paints and Adhesives*. INFORM. United States of America.p.7.

⁵¹ USEPA (1990). *Guides to Pollution Prevention. The Paint Manufacturing Industry*. USEPA/625/790/005 June. p.6.

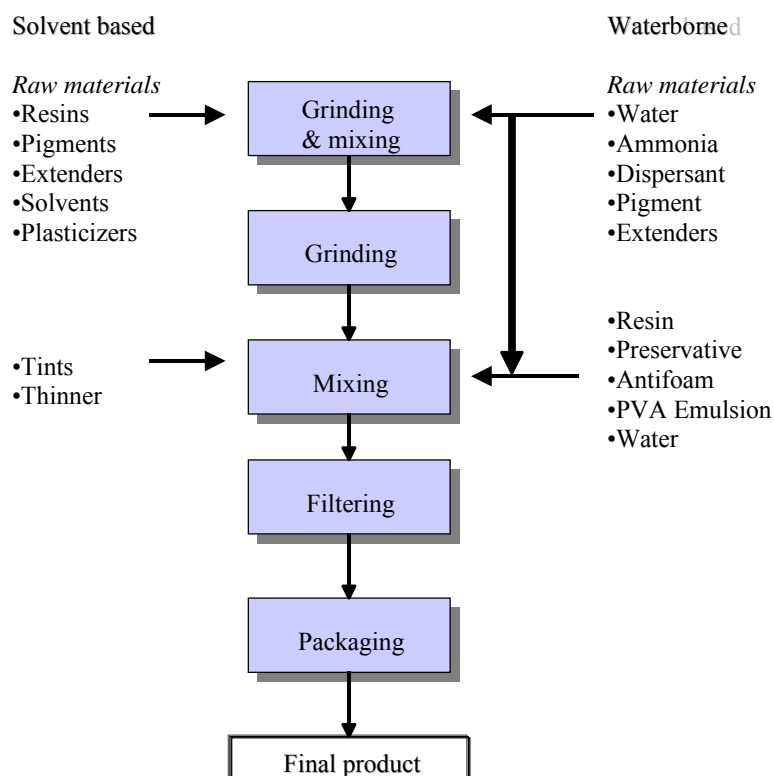


Figure 5. Flowchart for the manufacturing of solvent-based and waterborne paints. Source: USEPA (1990). *Guides to Pollution Prevention. The Paint Manufacturing Industry*. USEPA/625/7 90/005 June. p.7.

For the waterborne paint, the preparation begins by mixing water, ammonia and a dispersant in a mixer. Later on, dry pigment and pigment extenders are added to the mixture. The batch is put in a mill for grinding and then transferred to an agitated tank. In the tank, resins and plasticizers are added together with preservative and an antifoaming agent. Subsequently, a polyvinyl acetate emulsion is added and lastly the water is added as thinner. After this stage, the manufacturing process is similar to that of the solvent-based paint.⁵²

3.2. The environmental aspects, effects and impacts of paint manufacture

Generally, the aspects of paint manufacture are use of non-renewable resources and toxic compounds. The production process often requires a high consumption of energy and large quantities of water, depending on the type of machines and technologies used.⁵³ Negative effects on the environment are often owing to use of toxic substances and extensive cleaning of containers and equipment with solvents, which give rise to air and water emissions.⁵⁴ The primary wastes of the paint industry are empty raw material packages, dust from air pollution control equipment, spills and equipment cleaning wastes.⁵⁵

⁵² USEPA, p.6.

⁵³ FOEFL (1994). *Comparative Ecological Evaluation of Paint Substances in the Building Industry*. Federal Office of Environment, Forests and Landscape. № 186. Vol 1. p.7, 16

⁵⁴ Siljebratt, L., *Miljöanpassad produktion i Malmöhus län*. TEM Foundation, University of Lund, 1996, p.28.

⁵⁵ USEPA, pp.6-7.

Effects on the environment can occur during the paint manufacture and during the application of the paint. The main environmental effects of the paint manufacture are air pollution and water- and soil contamination. The paint manufacture also contributes to depletion of ozone in the stratosphere and creation of ozone in the troposphere. These environmental effects have impact on human health and wildlife. Emissions of volatile organic compounds (VOCs) and dust from powder raw material can occur during the production process. VOC contained in the paint can also be released during the drying process. Toxic compounds can be found in the wastewater. After the production process, such compounds can also be released to the environment during the application of the paint, when the paint is in place and/or during the removal and disposal of damaged paint.⁵⁶

Table 3. Environmental aspects, effects and impacts related to paint manufacture. Source: Espinosa, M., Kängsepp P., Larsson, M., Lööv, A., *Sustainable Industries - Final Assignment "Strategy for Developing Sustainable Industries" Case study: The Paint Industry exemplified by the fictive company "Rainbow Ltd."*, Optional course: Industry and environment, LUMES, 2000-04-11, p.6.

Environmental aspects	Environmental effects	Environmental impacts
Emissions of volatile organic compounds (VOCs).	Air pollution. Ozone depletion in the stratosphere. Ozone creation in the troposphere.	Threats to human health (respiratory damages) and wildlife.
Toxic compound in wastewater (includes heavy metals such as Pb, Cd, Hg, as well as solvents).	Toxic contamination of soil and/or water.	Threats to human health (loss of reproductive capability, damages on the nervous system and risk for cancer).
Chemical compounds leaching out from the waste land fills.	Groundwater contamination.	Threats to human health and wildlife.
Water use.	Demand of surface and/or ground water resources.	Potential water shortage, which might lead to conflicts.

3.3. The relationships between paint manufacture and the General Rules of Consideration

The paint manufacture is made up of several production processes before a final product is ready. The General Rules of Consideration can impact the situation before the initial production process, during the different production processes as well as after the final product is manufactured.

Before operators can commence paint manufacture, they have to find a suitable location for the operations and gain knowledge about how to perform the operations. The manufacturing process has to run efficiently and smoothly. Good knowledge and technology can improve the efficiency and prevent mismanagement, overuse and waste. Good knowledge and judgement in the selection of raw material and products can improve the product from qualitative, health and environmental viewpoints. Preventative plans and actions have to be elaborated to make sure the manufacturing process is safe from environmental and human health aspects. After the final product

⁵⁶ Young, S. J., Ambrose, L., Lobo, L., p.9.

is manufactured, operators have to make sure that no damages or nuisances have occurred that are not allowed according to the license and the legislation.

The General Rules of Consideration can be linked together with the manufacturing of paints. They are of course not the only factors that can influence the manufacturing of paints. Nevertheless, the Localisation Principle and the Demand for Knowledge are of relevance in the preparation phase when commencing the manufacturing of paints. The Demand for Knowledge, the Product Choice Principle, the Resource Management and Eco-cycle Principles, the Best Possible Technology (BPT) Principle and the Precautionary Principle can exert influence during the manufacturing process. The Liability to Remedy Damage can in some cases arise after performance of the operations.

The Rule of Reasonableness and the Stop Rule differ from the other General Rules of Consideration, because they have not the same addressees. The Rule of Reasonableness and the Stop Rule are directed towards supervisory authorities and probation authorities, while the other Rules are directed towards individuals, operators and authorities ('each and everyone'). Therefore, the Rule of Reasonableness and the Stop Rule do not explicitly affect companies' manufacturing processes, since these Rules are not directly directed to operators.

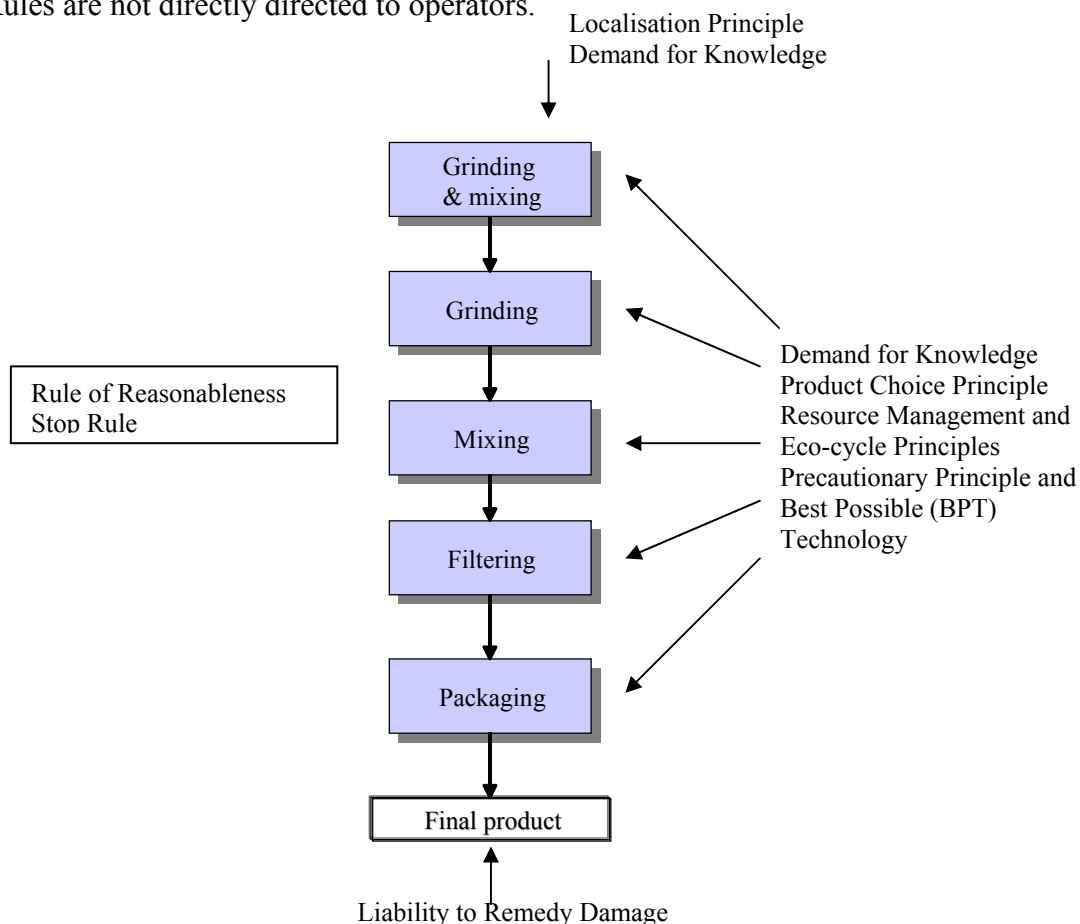


Figure 6. The relationships between paint manufacture and the General Rules of Consideration.

3.4. Environmental management systems

In today's business world, environmental management systems have become common phenomena in many parts of the world. In Sweden, environmental management systems according to ISO 14001 standard and EMAS have captured increasing interest among companies of different kinds and by the society.

ISO (International Organization for Standardization) is a worldwide federation of national standardisation bodies. ISO series are international, voluntary environmental management standards that provide a common framework for managing environmental issues. The ISO standards apply to all types of organisations. The ISO 14001 standard 'Environmental management systems - Specification with guidance for use' specifies the requirements of an environmental management system, which helps an organisation in a systematic way to deal with its environmental aspects and control the impacts of its operations.⁵⁷

The Eco-Management and Audit Scheme (EMAS) is a regulation, which was adopted by the European Council on 29th of June 1993 and came into force in July the same year. It establishes a voluntary environmental management scheme and allows companies in the industrial sector to participate. It aims to promote continuous environmental performance improvements of the committing sites' industrial activities. The committing sites should evaluate and improve their environmental performance and provide relevant information to the public.⁵⁸

3.5. Environmentally hazardous activities

In the industrial sector, many companies perform environmentally hazardous activities and must therefore operate under a licence according to Swedish law. The concept of environmentally hazardous activities is defined in the EC 9:1. For example, wastewater emissions, emissions to air and storage of chemical remainders are comprised by the concept. The most environmentally hazardous activities are designated A, which means that the company has to apply for A licence at an Environmental Court. Other environmentally hazardous activities with a certain proportion are designated B, which signify that the company has to apply for B licence at the County Administrative Board. Environmentally hazardous activities with a smaller impact are designated C and for them it is enough to apply for C licence at the local government committee for environmental and health matters.

3.6. Results

The results in this subchapter originate partly from a questionnaire presented to fifteen paint industries with 1-249 employees in Scania and partly from interviews with representatives of these companies. Twelve of the interviews were carried out by

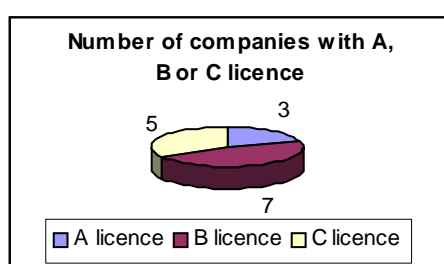
⁵⁷ International Organization for Standardization, *TC 207 on Environmental Management*, available at <http://www.tc207.org/>, 2000-01-06.

⁵⁸ European Commission, *Eco-Management Audit Scheme*, available at http://europa.eu.int/comm/environment/emas/intro_en.htm, 2000-01-06.

phone, two by personal interviews at the business sites and one by e-mail correspondence.

3.6.1. General about the companies in the case study

All the companies in the case study perform environmentally hazardous activities. Some of the companies have A licence. The reason is that they do *not only* manufacture paint, finishes and printing ink, but also their own polymers (polyurethane and acrylics) and other binders and for that A licence is required. The companies with B licence are allowed to manufacture more than 1000 ton of paint, finishes and printing ink per year, while the companies with C licence are allowed to manufacture more than 1 ton *but* maximum 1000 ton of paint, finishes and printing ink etc. per year.⁵⁹



Three companies have A licence and five companies have C licence. Almost half of the companies in the case study have B licence.

Graph 1. Number of companies with A, B or C licence.

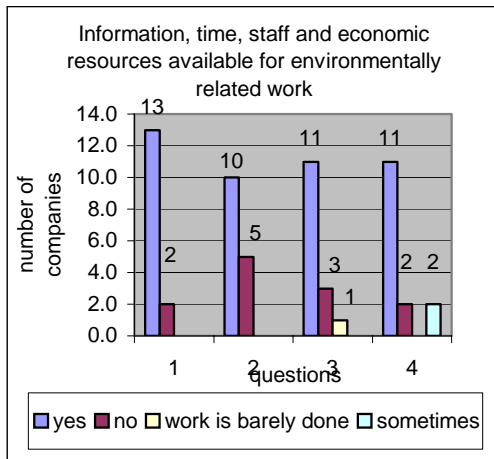
When the companies were asked about the environmental aspects, effects and impacts of their operations, the answers were varied. About seven of the companies said that the operations of the company do not have any significant effects on the environment. They claimed that there are basically no environmental aspects of the operations at all. One company pointed out that the company is not an 'environmental villain'⁶⁰. The remaining companies realise that there are environmental aspects, effects and impacts of their operations and most of them mentioned air emissions (mainly VOC) as one of the most significant aspects of the paint manufacture. Emissions to water, waste and transports were also mentioned as three important aspects. Furthermore, spillage, wastewater, dangerous substances, powder/dust, noise and consumption of resources and raw materials were pointed out as aspects to take into consideration in the manufacturing process.

The companies were asked about their opinions regarding information, time, staff and economic resources available for environmentally related work⁶¹.

⁵⁹ See Ordinance (SFS 1998:899) regarding environmentally hazardous activities and health protection with annex.

⁶⁰ All the interviewed companies have been promised anonymity. Therefore, the companies have been classified after the alphabet according to a random method of selection. This company is classified as company C.

⁶¹ Environmentally related work is here defined as work that in some aspect relate to the environment. It can be to update information about current environmental legislation, communicate news in the environmental field, educate employees in environmental matters relevant for the manufacturing, take care of contacts with the environmental authorities, classify and label raw material and products, make product information sheets, adjust production processes to environmentally more sound methods or make environmental reports.



Question 1: Does the company have enough information about the General Rules of Consideration?

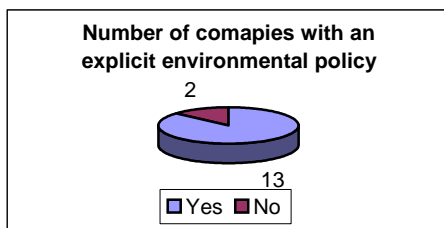
Question 2: Does the company have enough time for environmentally related work?

Question 3: Does the company have enough staff for environmentally related work?

Question 4: Does the company have enough economic resources for environmentally related work?

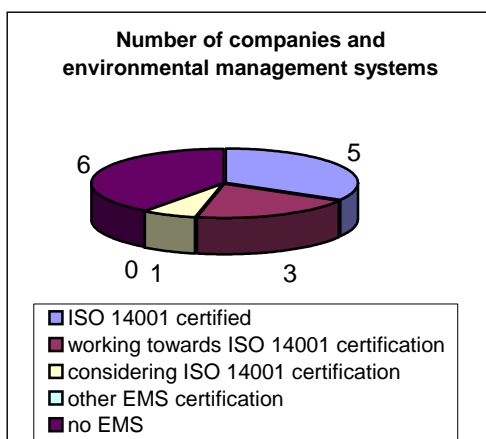
Graph 2. The companies' scope of information, time, staff and economic resources for environmentally related work.

Affirmative answers to all the questions dominate and indicate that most of the companies think they have enough information, time, staff and economic resources for environmentally related work. The question about whether the companies have enough time for environmentally related questions gets the least affirmative answers and the most negative answers.



Thirteen of the fifteen companies have an explicit environmental policy i.e. an environmental policy available for the public.

Graph 3. Number of companies with an explicit environmental policy.

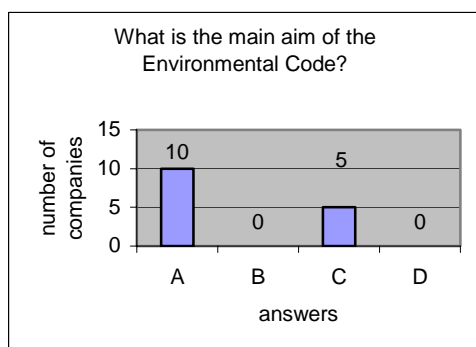


There are together nine companies, which have, work towards or consider an ISO 14001 certification. These companies consequently constitute a larger part than the companies without environmental management system. There are no companies, which have or consider EMAS or other environmental management systems.

Graph 4. Number of companies and environmental management systems.

3.6.2. Questionnaire

The questionnaire, which was presented to the companies, consisted of eight questions. The following graphs show the companies' answers to the nine questions.



A: The main aim of the EC is to promote sustainable development in society.⁶²

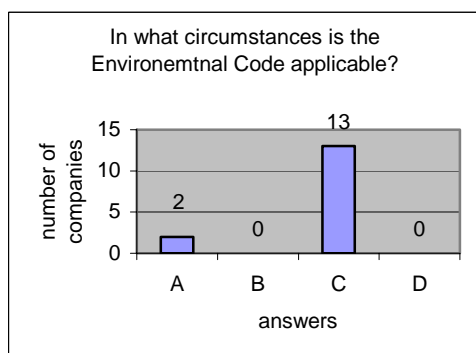
B: The main aim of the EC is to promote technological and economical exploitation of the environment.

C: The main aim of the EC is to protect the environment and human health in a short-term perspective.

D: Do not know.

Graph 5. The main aim of the Environmental Code.

Ten companies chose the correct answer, while five companies did not know about sustainable development.



A: The EC is applicable when damages on the environment and/or human health are obvious.

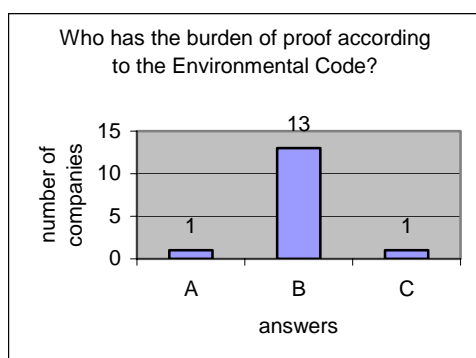
B: The EC is applicable when damages on the environment and/or human health have occurred.

C: The EC is applicable when there are risks for damages on the environment and/or human health.

D: Do not know.

The correct answer is dominating since 13 companies choose it.

Graph 6. The circumstances when the Environmental Code is applicable.



A: The authorities have the burden of proof according to the EC

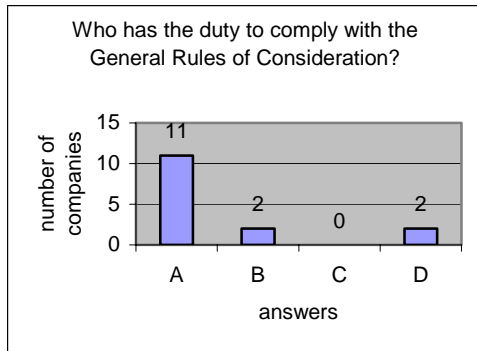
B: The operator has the burden of proof according to the EC.

C: Do not know.

Thirteen companies chose the correct answer. Only one company thought that the burden of proof lies upon the authorities.

Graph 7. The burden of proof according to the Environmental Code.

⁶² The correct answer is marked with bold characters. The correct answers can be found in the legal text and preparatory works of the Environmental Code.



A: Each and everyone have a duty to comply with the Rules.

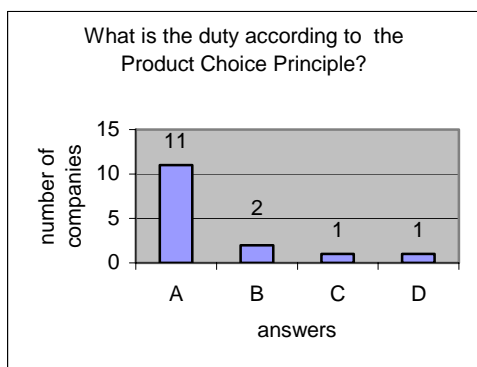
B: Only companies have a duty to comply with the Rules.

C: When exercising public authority, the authorities have a duty to comply with the Rules.

D: Do not know.

Graph 8. The duty to comply with the General Rules of Consideration.

Eleven companies chose the correct answer. Two companies thought it is only the companies' duty to comply with the Rules.



A: You should choose the least harmful product for the environment and human health.

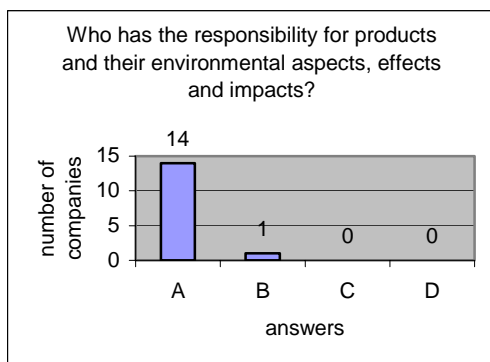
B: You should choose the least harmful products for the environment and human health, but only when there are technical proofs.

C: You should choose the least harmful product for the environment and human health, but only when it is economically motivated.

D: Do not know.

Graph 9. The duty according to the Product Choice Principle.

Eleven companies chose the correct answer, while there were double as many that chose the answer emphasising technical proofs than the answer emphasising economic motivations.



A: The producer has the responsibility to assess the aspects, effects and impacts of a product and make it environmentally sound.

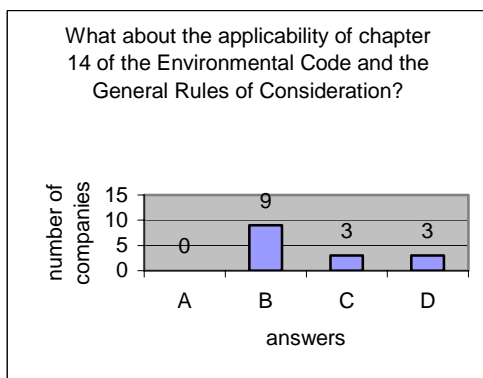
B: The consumer has the responsibility to assess the aspects, effects and impacts of a product and make it environmentally sound.

C: The authorities have the responsibility to assess the aspects, effects and impacts of a product and make it environmentally sound.

D: Do not know.

Graph 10. The responsibility for products and their environmental aspects, effects and impacts.

A distinct majority chose the correct answer. Only one company thought it is the consumers' responsibility to assess a product and make it environmentally sound.



A: The EC 14: is applicable instead of the General Rules of Consideration

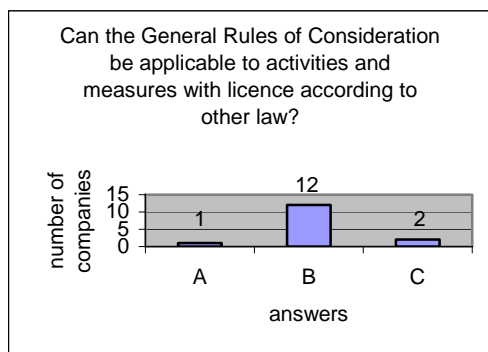
B: The EC 14: is applicable at the same time as the General Rules of Consideration.

C: The EC 14: takes precedence of the General Rules of Consideration.

D: Do not know.

Graph 11. The General Rules of Consideration and the provisions about chemicals etc. in chapter 14 of the Environmental Code.

This graph illustrates the connection between the General Rules of Consideration and other chapters of the Environmental Code. Nine companies chose the correct answer. Three companies thought that the special provisions in chapter 14 about chemicals etc. take precedence of the Rules in chapter 2.



A: A license according to other law than the Environmental Code is valid and the General Rules of Consideration are not applicable at the same time.

B: The General Rules of Consideration can be applicable in parallel with license according to other law.

C: Do not know.

Graph 12. The applicability of the General Rules of Consideration to activities and measures with licence according to other law.

Twelve companies know that the Rules can be applicable on activities and measures in parallel with licence according to other law. One company did not think that the Rules could be relevant to apply when there is a licence according to other law.

3.6.3. Interviews

The interviews were based upon two main questions:

1. How and to what extent do the General Rules of Consideration influence the paint industry?
2. What is the conception of the General Rules of Consideration?

Since a qualitative approach with open answers was used, a number of different sub-questions were asked during the interviews. The following text summarises the opinions of the companies' representatives.

The way and extent of influence of the General Rules of Consideration on the paint industry

Company A. is not familiar with the General Rules of Consideration and has not had any contact with them. The company does not know how the Rules can affect the company. The Rules have little importance to the company. The company does not

consider them in the daily work. The company has been in business for about ten years and during that time the production procedure has not really been changed. Accordingly, the company has not taken precautionary measures because of the Environmental Code.

Company B. has not up to now had any direct contact with the General Rules of Consideration. It considers the Rules as very important since the business is very dependent on chemicals, which affect the environment both directly and indirectly. The Rules influence the daily work by way of the company's environmental policy created in 1996, which was confirmed by the Rules. The Rules have altered the company's choice of business products. When the company makes its continuous judgements of raw material, the Rules are part of the base for decisions. The Rules have not brought about introduction of new precautionary measures for the company. The company has improved management routines of chemicals, but they would have been initiated independent of the Environmental Code. The company is conscious about its environmental impacts irrespective of the existence of the Rules. The Rules will have an important role, if the company alters or changes its operations.

Company C. has received information about the General Rules of Consideration. The Rules are of no significant importance. The Environmental Code has not penetrated the mind of the company and the Rules have not had impact on the company yet. The company does not consider the Rules in the daily work and has not taken new precautionary measures or altered its operations because of them. So far, no application of them has been on the agenda of the company. The company makes sure it follows its licence and that its operations are approved. It takes a lot (e.g. price factors) before the company changes something that already works. Routines and repetition are very important.

Company D. The Environmental Code has lead to a more critical thinking from an environmental viewpoint. The General Rules of Consideration have a pretty big importance. They do not influence directly, but rather indirectly. Once implemented, the environmental management system (ISO 14001 certification) will serve as basis for the company together with the environmental legislation. The Rules affect the choice of raw material and suppliers. The company works actively to replace harmful components in its products. When decisions are taken both the Rules, economic motives and concerns about working environment have influence. In spite of the Environmental Code it is not easier to motivate allocations of money to environmental purposes. The company has not taken more precautionary measures than usual, nor has it altered its operations just because of the Rules.

Company E. has so far not had any contact with the General Rules of Consideration. The Rules, nevertheless, influence the company. You do as you are allowed to do and follow the existing provisions in the law and the conditions in the licence. You should take care of the environment and human health and co-operate with the authorities. Company E. produces paints for children, a very specific target group, and the company has therefore always been very careful with what compounds the paint contains. The company operates according to the same routines since the 1990s and has not taken precautionary measures or altered its operations, because of the Rules.

Company F. The General Rules of Consideration as such are important for the environment and human health. They have great significance for the company and influence the daily work in an indirect way through the company's environmental management system (ISO 14001 certification). The company has been in contact with the Rules, but cannot say how or with which of them. Actually, the representative of the company argues that the Rules do not affect it, except of what is set in the licence⁶³ and in the company's environmental management system. The company has not altered its operations just because of the Rules. The company operated according to most of the provisions of the Environmental Code already from its establishment in the early 1990s. Therefore, the representative of the company argues that it did not need to take any precautionary measures because of the Environmental Code.

Company G. Many of the General Rules of Consideration are obvious and built upon common sense. They have pretty small significance. The representative of the company thinks the Rules have more importance and influence on bigger companies. She claims that her company⁶⁴ already has an 'environmental spirit'. Some operations of the company can be related to the Rules, but you do not think about them as such in relation to those operations. Nevertheless, the Resource Management and Eco-cycle Principles, the Precautionary Principle and the Product Choice Principle influence the company's operations. The company chooses less harmful products owing to environmental and health concerns. It is a matter of survival in the business, since the customers are in great demand of environmentally sound products. The company has not altered its operations as a result of the Rules only. However, the company has taken precautionary measures during 1999 in connection with its ISO 14001 certification and the Environmental Code. There is now less spillage of liquids, more information to all employees about environmental aspects and more clear and distinct labelling of products. The company already before the Environmental Code thought about and worked according to this kind of principles and would have continued to do so irrespective of the existence of the Environmental Code.

Company H. The General Rules of Consideration have not been a burden for the company. The Rules are built upon common sense and already before the Environmental Code the company worked according to such principles thanks to its environmental management system (ISO 14001 certification). In this sense, the Rules confirmed the company's environmental management. The company is in contact with the Rules on a daily basis. The Rules permeates the operations of the company, which has strengthened the role of precautionary measures and highlighted the need to create improved accountable documents and action plans. Mainly the Product Choice Principle and the Precautionary Principle influence the company. For example, the company has action programs to find products to replace unsuitable products with. Environmental aspects are now always included at the agenda of the production department's meetings. It is easier to gain sympathy for measures, which aim to improve the environment, today, when the Environmental Code exists. Yet, the Rules were no revolution. The company had already previously applied this kind of principles and has not altered its operations exclusively because of the Rules.

Company I. is run according to the General Rules of Consideration. They have an indirect influence on the company's operations, since they are included in the

⁶³ The licence is, however, from 1998 i.e. the time before the Environmental Code.

⁶⁴ The company G has less than 10 employees.

company's environmental management system (ISO 14001 certification) and in the company's environmental goals. The Resource Management and Eco-cycle Principles and the Product Choice Principle are included in the ISO 14001 system. The company saves for example water and raw material and uses district heating instead of oil heating. All employees participate in the ISO 14001 work and that has increased their environmental conscious, but they do not relate their actions to the Rules while working. The company has not taken precautionary measures or directly altered its operations because of the Rules.

Company J. has been in contact with the General Rules of Consideration, but is at the same time not sure about which the Rules are and can give no example of a Principle. The Rules have importance for the company, but influence the operations of the company only to a rather small extent. Some operations and substances are forbidden and that has of course influenced the company. For example, methylchloride in paint removal agents is now forbidden and the production and sales have ceased. When the company decides about the choice of raw materials and products, the decisions are taken with the safety and health of the staff in mind; the company is concerned about the inner working environment. The company has Swedish suppliers and they check the raw materials. Therefore, the company does not have to check the raw materials themselves. Besides, the representative of the company utters it is sometimes hard to choose raw materials, because you cannot know today what will be considered as dangerous in the future. The company has not taken precautionary measures because of the Rules.

Company K. The General Rules of Consideration are rather unknown to the company, which has not been in contact with them. The Rules are considered to be of no importance for the company's operations. The most important for the company's operations is price and quality of raw materials and products. The company does not recommend a certain paint because of its good or bad effects on the environment. Instead, the interesting factors are quality and suitability of the product. Thus, an environmentally sound paint is not always a good paint. For example, plastic paints are not suitable for wood materials, because the wood cannot breathe and will be defective. Instead a solvent-based paint should be used. The company follows the same standards and routines as before the implementation of the Rules. It has a special safety adviser hired from a consulting company. The safety adviser takes care of safety and environmental issues for the company, participates in courses and updates relevant information for the company. The company itself is therefore not familiar with issues concerning safety and environment.

Company L. is in contact with the General Rules of Consideration on a daily basis. The Rules have great significance and lay as a ground for the environmental work of the company, which is ISO 14001 certified. The Localisation Principle is of interest when applying for a new licence. The Demand for Knowledge, the Precautionary Principle and the Product Choice Principle affects the selection of raw material. The Resource Management and Eco-cycle Principles influence the handling of waste and the disposal management. The Rules affect the choice of raw material, the development of new products and serve as a basis regarding knowledge and classification of raw material and products. They have indirect influence on judgements and assessments of past, present and future aspects and effects of products. They have also importance in the selection of suppliers of raw materials.

The company has not taken precautionary principles as a consequence of the Rules. In connection to the company's last licence application, it did, however, carry out measures to reduce its emissions. The company will be more influenced by the Rules the next time it applies for a new licence.

Company M. is aware of the General Rules of Consideration and follows them. It is difficult, though, to point out when and how they affect the operations of the company. Some of the Rules are obvious and clear, while some Rules are difficult to apply to the operations of the company. For example, who can decide if the Product Choice Principle is fulfilled? There are many different small compounds in various raw material, so how can you be sure of which raw material is the least harmful to the environment and human health? The representative of the company claims that small companies have a lack in environmental competence and knowledge, because they do not have enough time and strength.⁶⁵ The Product Choice Principle is probably the most prominent principle for the paint industry, in which product development is very important. The company cannot yet form an opinion about the scope of influence of the Rules or their importance for the company. The employees at the company do not think about the Rules as such in the daily work. In the daily operations, however, much of the purpose and implications of the Rules can be found in the environmental management system and the licence. The risk concept has been strengthened, but the operations of the company has not been altered expressly, neither has precautionary measures been taken, as a consequence of the Rules. The company plans to integrate environmental issues with health and safety. The Rules will likely gradually and as time goes by be interwoven in the operations of the company. They will influence future licence applications.

Company N. has not been in contact with the General Rules of Consideration and is insecure of which the Rules really are. The Rules are about common sense and in that aspect they influence indirectly the everyday work. But you do not have them handy all the time. They do not have a special importance for the company. The market and the competitors influence the decisions and operations of the company rather than the Rules. The company emphasises the importance of minimising the consumption of resources and materials, as it is necessary to render more effective to survive on the market. The operations of the company have not changed much. The company operates in the same manner as before the Environmental Code. Moreover, many of the rules in the Environmental Code also existed before, but in different forms.

Company O. The general environmental conscious was widely spread in Sweden also before the Environmental Code. Both the law and the general environmental conscious influence the operations of the company. Thus, it is a combination of influences. The company applies and works according to the General Rules of Consideration. The Rules have big importance for the company's operations. The company pays attention to the Rules all the time, by way of a decision to produce as environmentally sound products as possible. It is important to be one step ahead of the legislation and the rival companies in the business. The Rules help the company, above all, to carefully select the raw materials, which have the least harmful effects on the environment. When reflecting carefully, the company has made a lot of improvements since the implementation of the Environmental Code, e.g. regarding

⁶⁵ The company M has more than 100 employees.

selection procedure of raw materials, sorting of waste and recycling of rinsing water. However, the company has not directly altered its operations *only* due to the Rules.

The conception of the General Rules of Consideration

Company A. Sweden is a country built upon prohibitions. In many cases, people do not do anything unless the law forces them. In this sense, the legislation makes people act, but it is too many prohibitions nowadays. The understanding and application of the Environmental Code are difficult and the company is not familiar with the language or how to apply the General Rules of Consideration. The employees have too little knowledge about the legislation, but wants to learn more.

Company B. The aim of the General Rules of Consideration is to prevent environmental damages. The legislation is useful, if it is easy to control its observance. The company has not difficulties with understanding or applying the Rules.

Company C. expresses the opinion that you should do as the authorities say and stick to your licence. The Environmental Code reminds of the Planning and Building Act. The application of the Environmental Code is difficult. As a result of people's own interpretations of the provisions and their purpose, there are risks of arbitrariness, which makes the application worse. The company brings up concerns about legal rights, rule of law and need for reasonable praxis concerning the General Rules of Consideration.

Company D. The co-ordination of the environmental legislation has made the access to it easier. However, the legislation is too comprehensive to grasp and there is not time to get it all together. The company gets some help with understanding the Environmental Code from trade organisations.

Company E. There is not time to familiarise with the Environmental Code. Therefore, the employees only learn what they need to know to do their job and an independent consultant takes care of more 'advanced' environmental issues. The company has not changed a lot because of the Environmental Code and it has not experienced particular difficulties with the General Rules of Consideration.

Company F. is a small company, but the authorities had still high demands on it, when it was established. Despite that, the company survived in the business and it is now ISO 14001 certified. The company has not difficulties with understanding or applying the General Rules of Consideration.

Company G. The language in the Environmental Code is too strained and the General Rules of Consideration are sometimes too stilted and inaccessible. However, they make you think about important things. When you carry on activities you should take into consideration people's health and the environment from all aspects. The supervisory authorities can be formal and rigid, which makes the co-operation and application of the Environmental Code troublesome. They show little flexibility and have difficulties with discussing and understanding the different situations of large companies and small companies. The supervisory authorities treat everyone alike in an unfair way.

Company H. The aim of the Environmental Code is to minimise risks of bad health, take into consideration global environmental aspects, secure a healthy and safe working environment and the health of customers. The Environmental Code is a form of strengthened legislation, but the company already before worked according to similar provisions and principles. Consequently, the company has not had difficulties with the application of the General Rules of Consideration.

Company I. The General Rules of Consideration are probably a good tool to secure the nature is not destroyed. However, it is of crucial importance with authoritative supervision. Overall, the Environmental Code is easier and more co-ordinated than the previous legislation. The company has not had difficulties with the Rules.

Company J. The aim of the Environmental Code is to safeguard mankind and nature. Legislation is good, but often the authorities blame small companies for not being environmentally sound, while big 'environmental villains' get away. Besides, legislation is not enough to make a difference. All the same, the company has not had difficulties with understanding or applying the General Rules of Consideration.

Company K. has not difficulties with understanding the Environmental Code, even though it is too complicated and comprehensive now. It has made the possibilities to get the hang of environmental legislation worse. A simplification of the legislation would be welcomed and increase its intelligibility.

Company L. The aim of the Environmental Code is to create sustainable development. Legislation is a good basis for that, but not enough. The former Environmental Protection Act allowed changes of conditions in licences without re-examining the entire licence. That is not possible with the Environmental Code. Instead, it is necessary to re-examine the entire licence decision. However, if it is a minor change, the local authorities may examine the case. But if the authorities and the company in question cannot agree what a minor change is, the entire licence decision has to be re-examined by court and consultations and environmental impact assessments (EIA) have to be performed and proposals have to be circulated for comments by the parties concerned. The procedure may take up to 2 years, which is an unrealistic period of time in the business world. The time consuming procedure for licence applications may be due to problems during a running-in period. Nevertheless, the Environmental Code brings about uncertainties regarding the licence application. The whole licence decision has to be re-examined and several conditions can be changed at one time, not just the condition the company considered as relevant in the first place.

Company M. All companies and everybody in society should take their responsibility for the environment and that is the aim of the General Rules of Consideration. The company has no difficulties with understanding the Rules. It is too early to have an opinion about the application of them.

Company N. The aim of the General Rules of Consideration is to improve the state of the environment and for this legislation is a necessary tool. The company has not difficulties with understanding or applying the Rules. However, lack of time and staff

has constituted obstacles for the staff to take part in courses about the Environmental Code.

Company O. The aim of the General Rules of Consideration is to safeguard the environment and people. Legislation is a good tool to achieve this aim. The company has not difficulties with understanding or applying the Rules.

4. Analysis

The results of the questionnaire and interviews in the case study indicate a general awareness within the paint industry of the relevance of the environmental legislation when manufacturing paints. All the questions in the questionnaire presented to the companies in the case study were answered with the correct answers, which can be found in the legal text and preparatory works of the Environmental Code, by a majority.⁶⁶ The results show that there is substantial knowledge of producer responsibility, circumstances when the Environmental Code is applicable and who have the burden of proof according to the Environmental Code. They also show prevalent knowledge of licence issues i.e. the companies know that the General Rules of Consideration can be applicable to activities and measures even if these are operating under licence according to other law. There is further common knowledge of the duties of the Rules. However, the main aim of the Environmental Code and the relationships between its different chapters are not that well known.

Interestingly, thirteen of the companies in the case study claim they have enough information about the General Rules of Consideration. But it can be derived from the interviews that several companies have not had contact with the Rules and are not familiar with them. They cannot give examples of the Rules, nor do they know in what ways the Rules can influence companies. They cannot point out when and how the General Rules of Consideration influence their operations. In these companies, it seems to be seldom that the Rules are intellectually and deliberately connected to the companies' operations and their environmental aspects, effects and impacts. The provisions of the legislation and the management of the companies' operations are dealt with separately. This might imply that the understanding of the connection between legislation and the management of companies is insufficient. The reason for this might be lack of knowledge and understanding of the coherent picture, but it could also be dependent on the view of the legislation. If legislation is looked upon as being about prohibitions, hindrance and impediments for the company business, the companies might not want to integrate it in management strategies.

For one third of the companies, there is lack of time for environmentally related work. They have not familiarised themselves with the Environmental Code. One company claimed during the interview that small companies do not have enough time and strength for environmental issues. Another company claimed that the General Rules of Consideration are likely to impact and influence large companies more than small companies, because small companies more easily achieve 'environmental spirit'. The results of the case study indicate that these views are not correct. It is both small and large companies that do not have enough time for environmentally related work. The

⁶⁶ It ought to be mentioned, though, that one company with less than five employees did not have any correct answers at all to the questions in the questionnaire. The company has no environmental management system.

time aspect should be put in proportion to the size of the company, number of staff working with environmental matters, the company's economic resources and, last but not least, the attention and priority given by the management and the board of directors to environmentally related work. All of these factors are crucial for companies environmentally related work and, in consequence, companies' 'environmental spirits'.

Even though there might be lack of information and time for the General Rules of Consideration, the majority of the companies in the case study declare claim they have not had difficulties with understanding or applying the Rules. A few of the companies have had some trouble with the application. One company emphasises that it is too early to have an opinion about the application and feasibility of the Rules. Overall, it seems that most of the companies agree that the Environmental Code is more co-ordinated and easier to comprehend. However, a few companies disagree and claim that the legislation is too comprehensive and has made the possibilities to overview the environmental legislation worse. Sometimes the style of the language also poses an obstacle for understanding the content of the provisions. It is thus essential that the Environmental Code is arranged in a logical and comprehensive structure in order to fulfil its purposes and make the desired impact.

A small number of companies fear uncertainties around the application of the General Rules of Consideration, especially regarding the licence procedure. The changed licence procedure, where you have to re-examine the whole licence *unless* it is not a *minor* change, will influence the companies' operations. Thus, a common opinion is that the Rules will have more influence on companies when they apply for a new or changed licence in the future. There are also concerns about companies' legal rights and risks of arbitrariness in the application of the Rules. Hence, it is necessary with efficient supervision and reasonable praxis to realise an efficient implementation of the Rules.

The authorities have an important role when carrying out supervision. Therefore, companies' views of authorities should not be neglected or underestimated for the concern of the impact and effectiveness of the Environmental Code. Some of the companies in the case study with less than ten employees are not satisfied with how the authorities treat them. The authorities are too inflexible and treat everyone alike in an *unfair* way. They do not recognise the different situations, approaches and needs of large versus small companies. Among these companies, the authorities are apprehended as having high demands and expectations on small companies, while at the same time letting the 'big environmental villains get away'. Accordingly, a few of the companies argue that small companies get most of the blame of being environmentally harmful. This opinion may be an obstacle for the realisation of the aim and purpose of the Environmental Code and the General Rules of Consideration. Distrust of the authorities affect companies' willingness to co-operate. They might think the best is to comply with the authorities, but not do more than necessary, because it is no use anyway. Such reasoning may negatively impact the realisation of the purpose of the Environmental Code and the Rules and their purpose.

When it comes to the degree of contact with the General Rules of Consideration, the companies in the case study are split up. Some companies have had contact with the Rules. These companies often have or are working to implement an environmental

management system (ISO 14001 certification). In several cases, the Rules are included in the environmental management system and thus the company may even have a daily contact with them. One company clarified that even though the employees do not relate to the Rules as such in the daily work, much of their purpose and implications can be found in the environmental management system, the environmental policy and the licence.

Companies with or working towards an ISO 14001 certification generally seem to have been more in contact with the Rules than companies without such a certification or environmental management system. Based on the case study, the former companies also have greater understanding of the Rules and their purpose. Thus, nine companies, of which five companies have an ISO 14001 certification and the three companies are working towards it, chose the correct answer to all of the questions in the questionnaire. These results support the importance of environmental management systems for companies' environmentally related work and illustrate the crucial role of such systems.

A connection between the degree of contact with the General Rules of Consideration and the conception of the significance of them can be derived from the interviews. The companies, which have had some kind of contact with the Rules, generally consider them to be more important than companies, which have not been in touch with them. For the first category, the Rules often permeate companies and may lie as a foundation for their environmental work. The Rules often influence through the companies' environmental management systems, environmental policies and licences. However, this category maintains that they would have been working according to similar principles as the General Rules of Consideration irrespective of the existence of the Environmental Code. The second category claim that the General Rules of Consideration are of little or no particular importance. They mean that the Rules have not (entirely) penetrated the companies' strategies. Instead, other factors e.g. market demands, price, quality and health of the staff are of more importance for the company's businesses. This could maybe be interpreted as an orientation towards economical and social sustainability.

The degree of contact and the conception of the significance of the General Rules of Consideration seem to be determining factors for integration of the Rules into companies' strategies and environmental work. Consequently, the implementation of the Rules in practice is dependent on the companies' degree of contact with them and their conception of the significance of them. Causal connections between contact and significance of the Rules can be derived from the results of the case study. Hence, more contact with the Rules, more positive conception of their significance. Moreover, more significance of the Rules → more implementation of the Rules → more realisation of the aim and purpose of the Rules (more sustainable development) → more 'success' of the Rules → more significance of the Rules etc.

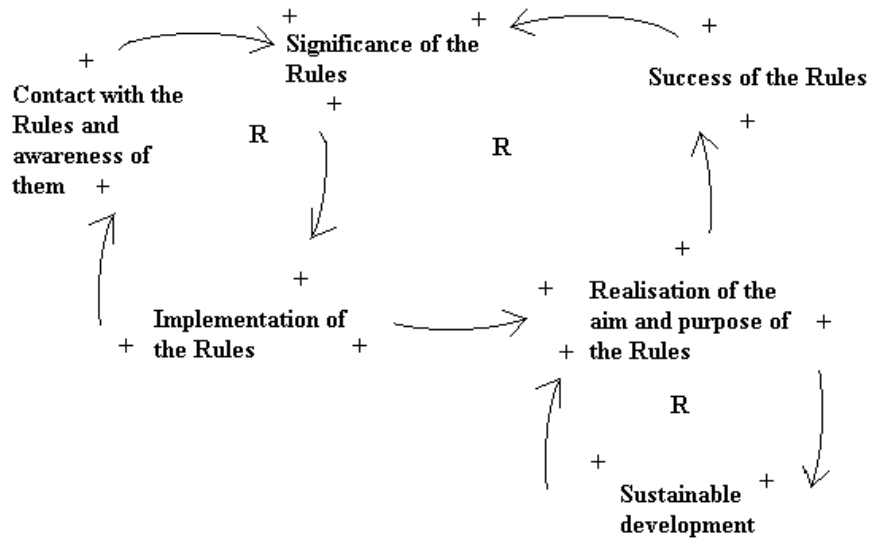


Figure 7. Casual loop diagram (CLD) of the General Rules of Consideration.

Practically none of the companies in the case study have altered their operations exclusively as a result of the General Rules of Consideration. They operate in the same manner and according to the same standards and routines as before the Environmental Code. There can be several reasons for this. Quite many of the companies claim they already had fulfilled the aims of the Rules previously - usually as a result of implementation of environmental management systems. For them, the Rules were no 'revolution' or burden. Quite many of the companies also claim the Rules are about common sense. From this opinion it can be derived that they believe they have been operating according to common sense all the time and therefore there is no need to change anything now. They point out that even if the Environmental Code is a form of strengthened legislation similar principles as the General Rules of Consideration existed before the Environmental Code but in different forms.

For the few companies, which have altered something in their operations expressly since the Environmental Code entered into force, the alterations have been carried out due to a combination of reasons e.g. implementation of environmental management systems, the General Rules of Consideration, new licences and/or market demands. The Rules have impact risk concepts, precautionary measures and improvements of products and process operations. They have induced more critical thinking from an environmental perspective.

Companies, which have or are working towards implementing environmental management systems, are the companies that have come farthest in the management of environmental matters. They are more aware of the General Rules of Consideration than the companies, which do not have environmental management systems. Most of the former companies actively worked with environmental matters before the Environmental Code. The ironic conclusion is then that the Rules can more easily impact the companies with environmental management systems, because of their responsiveness. At the same time these companies were already more or less working according to similar principles as the General Rules of Consideration also before these

Rules were contained in one chapter of the Environmental Code. These companies claim that they would have been operating according to the content and purpose of the Rules irrespective of the Environmental Code. The Rules have not brought about significant impact on management and strategies, but they have rather confirmed the companies' direction of management of environmental matters.

Table 4. Short summary of the analysis of the paint industries in the case study.

<u>Companies without environmental management system</u>	<u>Companies, which are or aim to be ISO 14001 certified</u>
<ul style="list-style-type: none"> • little contact • less familiar with the General Rules of Consideration • consider the Rules of little or no particular importance • claim that the Rules have not penetrated the companies' market strategies 	<ul style="list-style-type: none"> • more aware of the Rules • hgreater understanding of the Rules • consider the Rules of significance • often includes the Rules in the ISO 14001 certification • claim they would have been working according to the content/purpose of the Rules irrespective of the existence of the Environmental Code. • mean the Rules have confirmed the companies' management of environmental matters.
<ul style="list-style-type: none"> • practically none of the companies have altered their operations exclusively as a result of the Rules. 	<ul style="list-style-type: none"> • practically none of the companies have altered their operations exclusively as a result of the Rules.

Research suggests that external forces, e.g. environmental regulations, usually trigger companies to adopt environmental management plans, whereas the implementation of environmental management plans is more dependent on internal supportive forces and responsible environmental organisation.⁶⁷ In this sense, the General Rules of Consideration should have potential to act as driving force or stimulating factor for environmental management. The Environmental Code, the Rules and environmental quality goals can give guidance on management of environmental matters and elaboration of environmental management systems.

One of the main ideas with the Environmental Code is to create prerequisites for integrated implementation of environmental concerns into all sectors of society and stimulate industrial operators to precede the demands of the legislation. So far, it seems as if legislation lags behind the operators. Voluntary measures and market demands are in front of the legislation, which has up to now had confirmatory function of what is already going on within the paint industry.

5. Present situation and future outlook

How come that some companies (mostly without environmental management systems) are not aware of the General Rules of Consideration?, The Rules are not new in the legal context, even though the construction to hold them together is a new legal

⁶⁷ Angel D., P., and Huber J., *Building Sustainable Industries for Sustainable Societies*. Business Strategy and the Environment, Vol.5, 1996, p.129.

approach. They should know about most of the Rules because of their existence previously to the Environmental Code. Can it be that they cannot realise it is more or less the same principles but in another setting? Or do they not know about the previously principles, despite their existence in former environmentally related laws e.g. the Environmental Protection Act. The answer needs more research and can only be guessed upon now. Probably, these companies are focused on their licences. They know about what they are allowed to do and not and are satisfied with that. They do not need to know more; they want to focus on their business operations instead.

It has been argued that the General Rules of Consideration have not significant impact on the operations of the paint industries in the case study, because they are working according to or towards implementing ISO 14001 certifications. It has been found that these companies have had more contact and has greater understanding of the Rules. The finding is maybe not surprising. A minimum requirement of environmental management systems is the compliance of relevant legislation.⁶⁸ Consequently, it would be surprising if the companies, which have or aim at implementing ISO 14001 standards, did not know about the General Rules of Consideration and other relevant legislation.

Since a requirement of environmental management systems (e.g. ISO 14001 certification) is compliance of relevant legislation, environmental management systems can be catalysts for the demands of the legislation. It can be seen among the companies in the case study that environmental management systems and legislation complement each other and support and confirm the efforts of the companies in the environmental field. This has to be a positive situation. Thus, legislation is one of several instruments to direct the development of the society towards sustainability and it interacts with multitudinous driving forces, e.g. environmental management systems, in a complicated net.

What have the new legal approach of General Rules of Consideration contributed with? Well, the gathering of Rules into one chapter of the Environmental Code have facilitated the overview of the Rules' applicability to individuals, operators, companies, authorities etc. This hopefully enhances the knowledge about the law and improves its application. If that is actually the case, the goal of making a strengthened and co-ordinated environmental legislation has been fulfilled.

What are a future scenario for the companies, which have not or are not considering environmental management systems? Will they be more influenced by the General Rules of Consideration in the future? Will the companies, which claim that the Rules do not have importance for their operations, change their conception of the Rules? It can be assumed that legislation will influence this group. More knowledge and understanding of the Environmental Code and the Rules will be gained by time. There will be more praxis about how to apply the Rules and the Environmental Code in order to fulfil its purpose and goal of sustainable development. Market developments and economy will of course influence these companies also. A future scenario might be that these companies would be forced to involve in environmental management systems and sustainability concerns, because of demands from customers and the

⁶⁸ See e.g. International Organization for Standardization, *TC 207 on Environmental Management*, available at <http://www.tc207.org/>, 2000-01-06.

market. The companies might want to have new market profile and distinctive images towards competitors to find new markets and gain more profits.

However, in all this legislation is still a crucial factor. Probably, all of this would never happen without the existence of legislation, which legitimises certain operations and secures that operations, which conflict with the legitimised operations, are not taken. Legislation confirms the direction of the companies' work. It exerts pressure and can act as driving force for companies to start dealing with the environment and sustainable development.

Have the General Rules of Consideration had impact on sustainable development? It does not seem as the Rules have had impact on sustainability matters among the paint industries in the case study. Again, the companies are more focused on environmental management than legislation. The companies show a voluntary interest in making them more environmentally sound. This interest might lead up to ecological, economic and social sustainability concerns. If companies realise it pays off to invest in the environment, they might want to make more profit. They might realise that there are benefits with involving and committing in working environment, health of people in surrounding environments, ethical questions about how much each of us are entitled to exploit and take advantage of natural resources and about equity issues etc. If companies engage in this they can win new respect, new markets and gain profit. This might be a future scenario. There are of course many uncertainties, especially about market developments and economy. However, it can be assumed that the companies, which have/are working towards implementing environmental management system, will update themselves about the implementation of the General Rules of Consideration and other relevant legislation and therefore also be alert about their relevance and significance.

The General Rules of Consideration and the Environmental Code cannot succeed in the striving for sustainable development alone. However, the Rules and the Environmental Code matter in the development towards sustainability. They may have a future potential to induce a more coherent management of environmental, economic and social matters and thereby prepare for ethical responsibility and sustainable development. The future will show to what extent the Environmental Code and the Rules actually will impact the operations of the companies and their work with environmental and sustainability matters.

6. Discussion

Assumption 1: The General Rules of Consideration are a new legal approach introduced in the Environmental Code. Correct?

To codify general principles into binding rules of action is a new legal approach. Indeed, general principles similar to the General Rules of Consideration existed before the Environmental Code in different forms and with more or less modified significance. The General Rules of Consideration, which are based on previously general principles, are eight legally binding rules of action contained in one chapter of the Environmental Code. The Rules constitute the material basis of the Environmental Code and should aim at realising the purpose of the Environmental Code. The Rules are applicable to individuals, operators and authorities i.e. 'each and everyone' that

may harm the environment and human health significantly. The previous general principles included in e.g. the Environmental Protection Act did not concern 'each and everyone' and did not have such a broad area of application. Thus, the General Rules of Consideration are a new legal approach with a broader scope of application and broader area of application than previous legislation.

Assumption 2: The aim and purpose of the Environmental Code is to promote sustainable development in Sweden. Correct?

In the EC 1:1 it is stated that the purpose of the Environmental Code is to promote sustainable development. Overall, in the preparatory works of the Environmental Code it is expressed that the Environmental Code is one tool in the efforts to achieve sustainable development.

However, the realisation of the purpose of the Environmental Code can be modified by the Rule of Reasonableness. The material basis of the Environmental Code is the chapter of the General Rules of Consideration. Yet, the Rule of Reasonableness limits the scope of almost all of the General Rules of Consideration (the Liability to Remedy Damage and the Stop Rule are excepted). The Rule of Reasonableness deals with considerations of ecological, technical, economical factors. This Rule implies that ecological concerns should be weighed against technical means and what is economically reasonable in each specific case. The Rule of Reasonableness can therefore modify the realisation of sustainable development.

Hypothesis of the thesis: The General Rules of Consideration should serve as a tool in the efforts to achieve sustainable development. The idea to collect a number of legally binding rules of action applicable to individuals, operators and authorities, who pursue activities or take measures that may affect the environment and human health significantly, is a new legal approach. Thus, the Principles should influence a large number of individuals and operations. Correct or unrealistic?

The General Rules of Consideration should be able to influence a large number of individuals and operators and thereby promote sustainable development. The results and analysis of this thesis imply that the hypothesis is *not correct but rather unrealistic*. The General Rules of Consideration have not significant impact on the paint industries in the case study. Why? Firstly, the underlying principles of the General Rules of Consideration are not new in the legal context. The paint industries have gained knowledge about the content and purpose of general principles similar to the General Rules of Consideration previously and, then, operated according to them to the extent necessary. Secondly, several of the paint companies were ISO 14001 certified or working to become ISO 14001 certified also before the Environmental Code entered into force. This indicates that the paint industries in the case study probably were aware of environmental matters also before the Environmental Code. At least, several of the companies claim to have been aware of environmental matters previously to the Environmental Code. Thirdly, the law does not normally put more or new demands on the companies because of the Environmental Code until a reconsideration is of interest e.g. when a company needs to change its licence or receive a new licence. Therefore, it is not surprising or strange that the General Rules of Consideration have not significant impact on the paint industries in the case study.

The demands of the law is not really relevant when finding out about the ways how the General Rules of Consideration can influence the companies and what views and knowledge the companies have regarding this influence of the Rules. However, the demands, which the law puts on companies, are relevant for assessing the extent of influence of the General Rules of Consideration in practice in the paint industry in Scania. The outcome of such an assessment also affects the analysis of the impacts of the General Rules of Consideration on the operations of the paint industry. In these ways, the objectives to investigate to what extent the Rules influence the operations of the paint industry and to analyse the impacts of the Rules on the operations of the paint industry might afterwards not seem fully adequately. Nevertheless, the overall examination of the case study part was to examine the current significance of the Rules in practice among the paint industries in the case study. According to the results and analysis of the case study the demands of the law are not the most important factor for the significance of the Rules.

7. Conclusions

The General Rules of Consideration have not significant impact on the paint industries in the case study.

This is probably due to the previous existence of similar principles, to knowledge of the relevance of environmental matters gained previously and to the implementation of ISO 14001 certifications.

Similar principles as the General Rules of Consideration existed before the Environmental Code in different forms and with somewhat modified significance, but the construction of the Rules contained in one chapter applicable to 'each and everyone' is a new legal approach.

Voluntary measures (e.g. ISO 14001 certifications) and market demands have, so far, been in front of the legislation. More than half of the paint industries in the case study are or are aiming at being ISO 14001 certified.

Thus, the General Rules of Consideration have so far had a confirmatory function of the management of environmental matters and, in some cases perhaps, also a stimulating function for implementation of ISO 14001 certifications.

In the future, it is likely that the General Rules of Consideration will have more direct impact on the companies in the case study, mainly because of future changes in licences or new licences.

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