



**Lund University International Master's
Programme in Environmental Sciences
(LUMES)**

**INDUSTRIAL ENVIRONMENTAL LAW OF KALININGRAD
REGION, RUSSIA: COMPARISON WITH SWEDEN AND
DENMARK AND WAYS OF IMPROVEMENT**

Student: Ioulia Vassilieva,
Address: LUMES P.O. Box 170, Lund SE-221 00, Sweden
E-mail: ioulia.vassilieva.486@student.lu.se

Supervisor: Peter Pagh,
Professor of Environmental Law, dr. jur.,
Director of Institute of Legal Science C, Faculty of Law,
University of Copenhagen
Address: Studiestraede 6, DK-1455 Copenhagen K, Denmark
Tel: 35 32 31 27
E-mail: Peter.Pagh@jur.ku.dk

2002
Lund

Abstract

Industry plays very important role in life of modern society. Development of industrial sector has been accompanied by deterioration of quality of environment. It has caused a necessity in adoption of special legal requirements to enterprises, aiming at decreasing of their negative impact on environment. The aim of the thesis's investigation is making proposals for improvement of environmental industrial law of Kaliningrad region, Russia. This territorial unit of the country has right to adopt its own legislation in order to take into account peculiarities of the region. The proposals are based on comparative analysis of environmental industrial law of Kaliningrad region, Russia, and Sweden and Denmark. As Danish and Swedish legislation is influenced by EU law, some corresponding EC documents are involved into analysis. The mechanisms of licensing, environmental impact assessment, environmental management and audit, environmental charges and taxes, environmental damage compensation are discussed in the thesis. Basically, environmental industrial law of Kaliningrad region has the same components as Swedish and Danish. But provisions contained in Russian legal acts are not precise enough and usually very declarative. Therefore, the environmental industrial law of Kaliningrad region does not work properly. The possible variants of its improvement in order to make it more practically applicable are discussed in the thesis.

Table of Content

Table of Abbreviations	4
Introduction.....	5
1. Methods and materials	7
2. Theoretical framework	9
3. Results	13
3.1 Industrial environmental legislation of Kaliningrad region, Russia.....	13
3.1.1. General characteristic of Kaliningrad region and its natural resources	13
3.1.2. Industrial sector and its impact on environment	13
3.1.3. Federal and regional levels of legislation in Russia.....	15
3.1.4. The main characteristic of Russian federal legislation	15
Licensing.....	16
Environmental impact assessment and environmental expertise.....	16
Internal environmental control.....	19
Environmental management and audit.....	19
Environmental charges.....	20
Environmental damage compensation	20
Mechanisms, supporting cleaner production	21
3.1.5. Regional industrial environmental legislation of Kaliningrad region.....	21
3.2. Characteristic of the main EU legal acts, concerning environmental regulation of industrial activity	23
Environmental impact assessment	23
Environmental auditing.....	24
Integrated Pollution Prevention and Control	25
The Sixth Environmental Programme.....	26
3.3. Environmental industrial legislation in Denmark.....	27
Short description of Danish environmental industrial legislation.....	27
Licensing.....	27
Integrated pollution prevention and control.....	28
Environmental impact assessment	29
Internal environmental control.....	29
Environmental management and audit.....	30
Taxes and charges	30
Environmental damage compensation	31
Mechanisms, supporting cleaner production	31
3.4. Environmental industrial legislation in Sweden	33
Short description of Swedish environmental industrial legislation	33
Licensing.....	34
Integrated pollution prevention and control.....	36
Environmental impact assessment	36
Internal environmental control.....	36
Environmental management and audit.....	37
Taxes and charges	37
Liability for environmental offences.....	37
Environmental damage compensation	38
Mechanisms, supporting cleaner production	38

4. Discussion	39
4.1. Licensing.....	39
4.2. Environmental impact assessment	39
4.3. Environmental management and audit.....	41
4.4. Environmental charges.....	42
4.5. Damage compensation and environmental insurance.....	43
4.6. Mechanisms, supporting Cleaner Production	44
4.7. Unification of environmental law	45
Conclusions.....	47
List of references.....	48

Table of Abbreviations

EU – European Union

EC – European Commission

RF – Russian Federation

MNR – the RF Ministry of Natural Resources

IPPC – integrated pollution prevention and control

EIA – environmental impact assessment

EMAS – environmental management and audit scheme

LCA – life cycle assessment

CLD – causal loop diagram

IIIEE – International Institute of Industrial Environmental Economics at Lund University

Introduction

Industry plays significant role in the life of modern society. It is not only a manufacturing of goods. It determines status of community in the world, serving as source of welfare for individual persons in particular and society as a whole and as a guarantee of social stability due to employment and taxes, allowing distribution of industrial income according to the needs of society. Traditionally, the level of industrial development of the country has been seen as a level of development of the state itself.

However, there is another side of the medal. Industry is justly accused for being major threat to environment. As industry is an essential part of the modern society it has been a subject for various regulations, aimed at decreasing of its negative influence on environment. Industry and regulation of its environmental impact have been developing in different ways in different countries.

Industry is included into economic part of sustainable development, and it sets new requirements to enterprises activity. The modern legislation challenges task to make industry more sustainable, i.e. to comply enterprises' activity with interrelated environmental and social interests. The role of environmental law for sustainable development is underlined in Agenda 21¹.

This work is focused on industrial environmental law of Kaliningrad region, Russia. In Soviet times rapid industrial development of the country was reached due to huge and mainly irrational nature resources use. Widely spread opinion that natural resources of the country were unlimited and need for immediate industrial growth prevented the development of rational, resource-saving technologies, which could be less damaging for environment. It resulted in environmental problems which became too huge to be ignored. Russia, reborn in 1991, faced them and was forced to solve them. Russian environmental law was born anew during the last ten years. However, it is not easy task to do in 10 years period the same job as other countries have made during several decades.

This thesis's case study is law of Kaliningrad region. The region was chosen because of the several factors. First, every territorial unit from 89 territorial units of Russian Federation has right to adopt its own legislation in addition to the federal legislation. As environmental forces are quite active in the region, its law-issuing authorities aim to undertake some steps for improvement of environmental law. Secondly, I participated in the bilateral Swedish-Russian project ECOMAN on environmental policy of Kaliningrad region in 2001-2002. Questions of improvement of environmental regulation in industrial sector and its importance have been touched during the project, but they have not been deeply developed. This thesis is an attempt to study the problem. In the end, the paper will be sent to the Environmental Council of the Public Chamber of Kaliningrad region. Currently, the Environmental Council actively participates in decision-making process in this part of Russia.

The main object of the thesis is a comparative analysis of environmental industrial legislation of Kaliningrad region and two Scandinavian countries: Denmark and Sweden. These countries are regarded as states, showing good results in environmental protection policy, including requirements to industry. Besides, Kaliningrad region has more contacts with these two particular countries in comparison with other west-European countries. There is a highly supported by the region's authorities opinion that Kaliningrad region will not survive in isolation, which is possible after the region's surrounding by EU countries unless it will not be able to built good relationships with European countries². Improvement of quality of environment in the region through implementation of adequate legal requirements will play not the least role in this process.

The aim of the thesis is development of proposals for improvement of Kaliningrad region environmental law for industrial sector. The proposals are based on analysis of industrial environmental law of Sweden and

¹United Nations Conference on Environment and Development (1992) *Agenda 21*, Principle 11. Rio de Janeiro

²*Problem of legislation development in existing political context.* (2001) Kaliningrad: ECOMAN №1

Denmark. As these two countries are more experienced in environmental problems solution than Russia, it is expected that Kaliningrad region can learn something from them and use it for the regional development.

The goals of the thesis are:

- to give an overview of environmental industrial legislation of Kaliningrad region;
- to present a short description of the relevant EC directives and regulations as EC law influences a lot legal acts of the member countries;
- to make characteristic of components of environmental industrial law of Denmark and Sweden, which are relevant for comparison with analogous in Kaliningrad region law;
- to compare environmental industrial legislation of Kaliningrad region and two Scandinavian countries in order to develop proposals for improvement of Kaliningrad region law;
- to discuss possibilities and constraints of improvement of Kaliningrad region environmental industrial law.

Environmental industrial legislation is rather broad and includes different pieces of legislation: from requirements to nature resources use and payments for pollution to change of enterprises' behaviour due to cleaner production and LCA mechanism implementation. It is almost impossible to cover all these dimensions in one paper. Therefore some limitations have been set.

This paper deals with rather conceptual questions when with particular environmental aspects of particular industrial activities. Instead, the legal framework for diminishing of negative industrial impact is discussed. The questions, determining the environmental policy in the industrial sector as licensing, integrated pollution prevention and control, environmental impact assessment, environmental audit, legal base of some economic mechanisms as charges are examined.

Though implementation and enforcement of legislation is very important issue, it will not be deeply investigated in the thesis, as it is extremely complex issue, which can be a subject of a separate work.

The description of used methods and materials will be presented in the beginning of the thesis. It will be followed by the theoretical framework of the paper. Results include several subsections. The first one describes and analyses environmental industrial legislation in Kaliningrad region of Russia, including data on environmental impact of industry in the region; the role of manufacturing sector for Kaliningrad region community; environmental requirements to industry, imposed by law. Afterwards short characteristic of Danish and Swedish environmental industrial law will be presented. As legislation of Denmark and Sweden is significantly influenced by European Union, some of EC main documents, concerning environmental regulations of industrial activity are reviewed as well. The Results will be followed by Discussion, where the possibilities and constraints of environmental industrial law development in Kaliningrad region will be analysed. The main proposals for improvement of legal requirements for industrial sector in the region will be presented in Conclusions.

1. Methods and materials

The choice of methods and materials, used for work on thesis, has been determined by necessity to review the problem from different angles. As the thesis's topic is environmental law, the work has been mainly based on the analysis of legal documents, which have been primary sources of information for the work. The scope of environmental aspects of industrial activity is very broad; therefore legal documents of different levels and origin have had to be used.

Characteristic and analysis of environmental industrial law of Kaliningrad region, Russia, have been based on the federal and regional legal acts. The federal legal acts are requirements, which are set for a whole territory of Russia. Regional legal acts are developed by regions themselves in order to take into account local peculiarities of territorial units. The main source of Russian federal legislation is federal laws. The RF Federal Law on Environmental Protection, the RF Federal Law on Environmental Expertise, the RF Federal Law on Wastes of Production and Consumption, the RF Land Code, the RF Federal Law on the Earth's interior have been used in the thesis. As economic mechanism plays significant role for decreasing of negative environmental impact from industry, the documents as the RF Tax Code have been investigated as well. Apart from the federal laws, approved by the RF Parliament, the system of environmental legal documents include pieces of law, issued by the RF Ministry of Nature Resources or by the RF State Committee of Environmental Protection, which became a part of the Ministry in 2000. These documents include requirements to EIA, licensing, payments for nature resources use and environmental pollution, environmental reporting or internal environmental control, environmental audit, environmental damage compensation. They have been investigated as well. As it is necessary to know the future tendencies of the state environmental policy and its influence on environmental law, the policy documents as the RF Environmental Doctrine have been studied.

The thesis's object is the environmental industrial law of Kaliningrad region of Russia. Therefore the legal documents, which are special for this part of the country, have been analysed, for example, the Kaliningrad region Law on Environmental Policy of Kaliningrad region; the Kaliningrad region Law on Wastes of Production and Consumption. The newly developed Kaliningrad region Environmental Doctrine has been used in analysis. It gives ideas about future environmental policy in industrial sector; therefore it is important for understanding of which legal norms are required in the region. Furthermore, environmental legal acts of other regions of Russia have been studied in order to examine possibility of introduction of this or that new legal norm into Kaliningrad region legislation.

The legal acts of Denmark and Sweden have been investigated. Both countries are members of EU. Therefore some of EC legal documents, concerning environmental regulation in industrial sector, have been reviewed, for example, the EC Directive on the EIA, the EC Directive on Integrated Pollution Prevention and Control, the EC Regulation on Eco-management and Audit Scheme. The main Danish legal acts, which have been used for the research, are the Consolidated Environmental Protection Act, the Planning Act, etc. Swedish part of the Results chapter is mainly based on the Swedish Environmental Code, which is extremely complex document.

Official web-pages of different environmental authorities have been one of the main sources of information, especially for policy documents and reports.

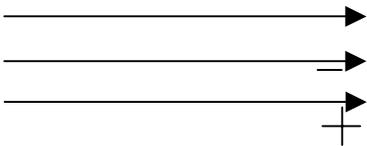
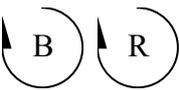
Though thesis is mainly based on primary sources of information, secondary sources of data have been involved as well. It has been necessary for evaluation and discussion of reviewed pieces of environmental industrial law. The secondary sources of information include publications of people, competent in this field.

Use of only written sources of information has not been sufficient. Therefore the method of interviewing has been applied. In particular, Russian and Swedish specialists have been asked some questions, helping to get better perception of the problem. The specific form of interviewing took place in year 2000, when training environmental audit was carried out by the students of IIIIEE, Sweden, at some of Kaliningrad enterprises.

Beforehand, a survey at Kaliningrad enterprises was done, providing information on enterprises' attitude towards environmental requirements, environmental authorities and environmental management and audit.

One more method, which has been applied, is analysis of processes by means of causal loop diagrams (CLDs). CLDs are tool, assisting to structure and conceptualise a problem. They give possibility to construct circular connections and the feedbacks for the problem. In CLDs the effects of the last element of the diagram influence the input of the first element, which results in a self-regulation of the whole system. A system can be either self-reinforcing or self-balancing. A reinforcing system is a system in growth. In a balancing system there is an agent which controls the exponential growth or is a limiting factor to the growth. The following parts comprise CLDs³:

Table 1. Symbols, used for causal loop diagrams drawing

Symbol	Meaning
	<p>The arrow is used to show causations.</p> <p>The – sign near the arrowhead indicates that the item at the tail of the arrow changes in the <i>opposite</i> direction.</p> <p>The + sign near the arrowhead indicates that the item at the tail of the arrow and the item at the head of the arrow change in the <i>same</i> direction.</p>
	<p>The symbol (B), found in the middle of a closed loop, indicates that the loop changes direction, causes the system to <i>fluctuate</i> or to <i>move toward equilibrium</i>.</p> <p>The symbol (R), found in the middle of a closed loop, indicates that the loop continues going in the same direction, often causing either systematic <i>growth</i> or <i>decline</i>.</p>

CLDs are a part of the systems analysis technique, which represents the interdisciplinary approach to the problems' solution. The central theme of such analysis is a constant awareness of the complexity and inter-relations of causes, effects, objectives and policy options⁴.

³ Roberts, N., et al. (1983) *Introduction to computer simulation, A system dynamics modeling approach*. System Dynamic Series, Productivity Press, Portland, Oregon, p56.

⁴ Rodgers W. (1994) *Environmental Law*. USA: West Publishing CO, p.29

2. Theoretical framework

The environmental law is very complex branch of law. It is based on our knowledge about processes, going on in environment. As environmental legislation needs to take into consideration the “laws of nature” it leads to *interdisciplinary approach* to environmental problems. As “all is interrelated with everything” in nature, it caused necessity of ecosystem approach to environmental studies. In parallel, environmental law challenges unavoidability of use of complex and integrative approach to environmental problems solution.

Irreversibility of environmental harm is another factor influencing decision-making⁵. It has two consequences: measures must be undertaken immediately, before it will be too late, and law must foresee future consequences and prevent negative changes. This factor gave born to prevention and precautionary principles. The prevention principle is based on idea that environmental damage should be preferably be prevented rather than cured. Precautionary principle requires preventative protective measures in case of possibility of negative impact on environment and human health, even if there is no direct evidence of causal relationship between the inputs and effects. Rectification of damage in source arises from this characteristic of environmental law.

Environmental industrial law has passed several phases in its development. Although the mechanism of payment for use of natural resources appeared long time ago, it was connected not with environmental policy, but rather with property rights. Environmental aspects of industrial activity were ignored until society faced problems, connected with nature contamination. Besides, the cost of environmental degradation was mainly borne not by the producer, but by the society as a whole, in the form of “externalities”⁶. So, the industrial sector was subsidised by society. Therefore the alteration of legal framework was proposed within which “private firms operate in order to direct their enterprise towards ends that accord more closely with the interests of society”⁷.

The requirements for limits on issuing of polluting substances were set and end-of-pipe solutions were introduced. Besides, as first victims of pollution appeared – people and nature – the necessity of environmental damage compensation mechanism appeared. The payments for nature contamination were laid down as well. However, end-of-pipe approach could not solve environmental problems. Ideas on environmental damage reduction in the source started to develop. The environmental impact assessment and licensing system became common. Cleaner production and best available technology concepts started to spread in many countries. “Cleaner Production” is a term used to describe production technologies and strategies that contribute to the closure of the production-process life cycle⁸. Cleaner production is the continuous application of an integrated preventive environmental strategy to process and product to reduce risks to humans and the environment. It involves conserving raw materials and energy, eliminating toxic raw materials and reducing the quantity and toxicity of all emissions and wastes before they leave a process. For products, the strategy focuses on reducing impacts along the entire life cycle of the product, from raw material extraction to the ultimate disposal of the product. Best Available Technology (BAT) means the most effective and advanced stage in the development of activities and methods of operation, indicating the practical suitability of particular techniques for providing in principle the basis for emission limit values designed to prevent and, where that is not practicable, generally to reduce emissions and the impact on the environment as a whole⁹.

⁵Kiss A. (1997). *Manual of European environmental law*, Cambridge University Press. p.9

⁶ Commoner B. (1971) The Closing Circle; Nature, Man and Technology in *Classics in Environmental Studies* by Nelissen N., et.al. Utrecht: International Books (1998), p. 190

⁷ Mishan E.J. (1967) The Costs of Economic Growth in *Classics in Environmental Studies* by Nelissen N., et.al. Utrecht: International Books (1998), p. 99

⁸ Shyam R. Cleaner Production: A new horizon. *Chemical Business*, September 1999

⁹ Council Directive 96/61/EC of 24 September 1996 concerning integrated pollution prevention and control *Official Journal L 257*, 10/10/1996 P. 0026 - 0040

Further development of science showed importance of precautionary measures. Now, the precautionary principle is claimed in many environmental legal acts, though its practical implementation is still disputed.

While environmental tensions have been increasing, the environmental awareness has been rising as well. It has imposed additional pressure on law-makers, pushing them to toughen environmental requirements to enterprises. On the other hand, consumer's behaviour can change producer's behaviour, making improvement of environmental performance of an enterprise's profitable.

The development of environmental policy has led to intensive environmental legislation. The number of environmental requirements to industrial sector, as well as the number of legal environmental documents, have increased. However, more legislation does not necessarily mean a cleaner environment. The different historical origins of environmental law, the lack of common concepts and strategies, different legislative techniques, different instrumental mixes and different normative levels of regulation have made environmental law a sort of normative labyrinth¹⁰. The legal rules must be comprehensive and, above all, rules need to be feasible and enforceable¹¹. It resulted in necessity for integration, unification and codification of environmental law.

Birth of sustainable development concept marked beginning of the new period of environmental law history. Now this branch of legislation must aim not only at environmental protection, but set sustainable development as an overall target.

The described above tendencies can be traced in the history of development of environmental industrial law of Sweden and Denmark and to less extent in the history of environmental industrial law of Russia.

The features of environmental law have determined development of approaches and techniques, employed by this branch of legislation. Modern environmental industrial law uses:

- command-and-control approach, including standards, guidelines, approving and permissions;
- market or economic approach, comprising environmental charges, subsidises, etc.;
- negotiating approach through voluntary environmental agreements;
- goal-based approach, when final goals of activity are set, as environmental quality standards for air and water, for example;
- public and transparency approach indicates participation of public sector and NGOs;
- strict approach is based on belief that environmental protection benefits from stricter rules;
- and sectoral approach, which indicates the institutional distinctions between different sectors, though it may conflict with the principle of integration¹².

The thesis covers some of the environmental law techniques, which have been developed according to command-and-control, economic approaches and public participation approach.

Licensing system is a part of command-and-control approach in environmental law. According to this system, each activity or establishment considered environmentally hazardous is defined or listed and becomes subject to formal licensing procedure. As a rule, licensing is not designed to eliminate all pollution or risk, but rather to control serious pollution and to reduce its level as much as possible. Licences represent a middle ground between unregulated industrial practices and absolute prohibitions¹³. In addition to laws containing general licensing measures, it is common to find norms that regulate directly or indirectly only specific aspects of environmental protection, such as air pollution, drinking water, noise, chemicals, and wildlife. However, the integrated approach to environmental licensing is developing. For example, it is

¹⁰ Rehbinder E. (1995) Points of Reference for a Codification of National Environmental Law in *The Codification of Environmental Law* by Bocken H. and Ryckbost D. p. 159

¹¹ *Classics in Environmental Studies* (1998), edited by Nelissen N., et.al. Utrecht: International Books. p. 258

¹² Pagh P. (1995) Experiences of and Plans for the Codification of Environmental Law in Denmark. in *The Codification of Environmental Law* by Bocken H. and Ryckbost D. p. 151

¹³ Kiss A., Shelton D. (1997) *Manual of European environmental law*. p.120

reflected in the EC Directive on Integrated Pollution Prevention and Control. It seeks to avoid mistakes of the past, when environment was treated as easily separable into discrete media (air, water, land, groundwater)¹⁴.

Environmental impact assessment is also a consequence of command-and-control approach use. EIA is a policy and management tool for both planning and decision-making. EIA assists to identify, predict and evaluate the foreseeable environmental consequences of proposed projects, plans and policies. It provides decision-makers with information, which is necessary to determine permissibility of a project realisation and its conditions¹⁵. Besides, EIA reflects public participation approach as it usually includes public involvement in discussion on a project.

Environmental management and auditing is the systematic investigation of the procedures and work methods of a company or institutions. It is designed to determine to what degree these methods and procedures are consistent with legal regulations and generally accepted practices. Apart from it there is an external environmental audit or independent review, serving two purposes. First, it is a legislative control mechanism of growing popularity. Second, it is a device of importance to business in sales, acquisitions and other transactions involving assets, where the risk of liability for environmental non-compliance can be a crucial element in negotiations and contracts¹⁶.

Environmental charges are a component of economic approach in environmental law. They can be divided into groups:

- effluent charges, which are paid for discharges into environment,
- user charges, which are paid for the use of natural resources or for the collective treatment of effluents,
- product charges, laid upon price of polluting products,
- tax differentiation, which lead to more favourable prices for environmental-friendly products or processes,
- and administrative charges, which are paid for licensing, for example.

From economics theory point of view, charges must have an incentive function. Base and rate of effluent or of product charges might be fixed in such way that they will lead the polluters to internalise the cost of the pollution, i.e. the polluters will include in their production costs the cost of the damages caused by their pollution. Economic mechanism of environmental protection can include also *subsidises, low interest rate credits, tax allowances*, etc. in order to stimulate environment-friendly activities¹⁷.

Environmental damage compensation. In spite of all preventive measures, environmental harm does occur, sometimes through intentional or negligent conduct, sometimes by accident. The concept of damage to the environment is often viewed as a property concept, where economic value is placed on the lost or damaged object. This may include market value, loss of income, and damage to moral, aesthetic and scientific interests¹⁸. Environmental damage compensation can be viewed as a preventive measure for environmental protection as it gives additional incentive to enterprise to avoid accidents and as remedial measure for restoration of damage, caused to environment and human health.

¹⁴ Rodgers W. (1994) *Environmental Law*. p. 59

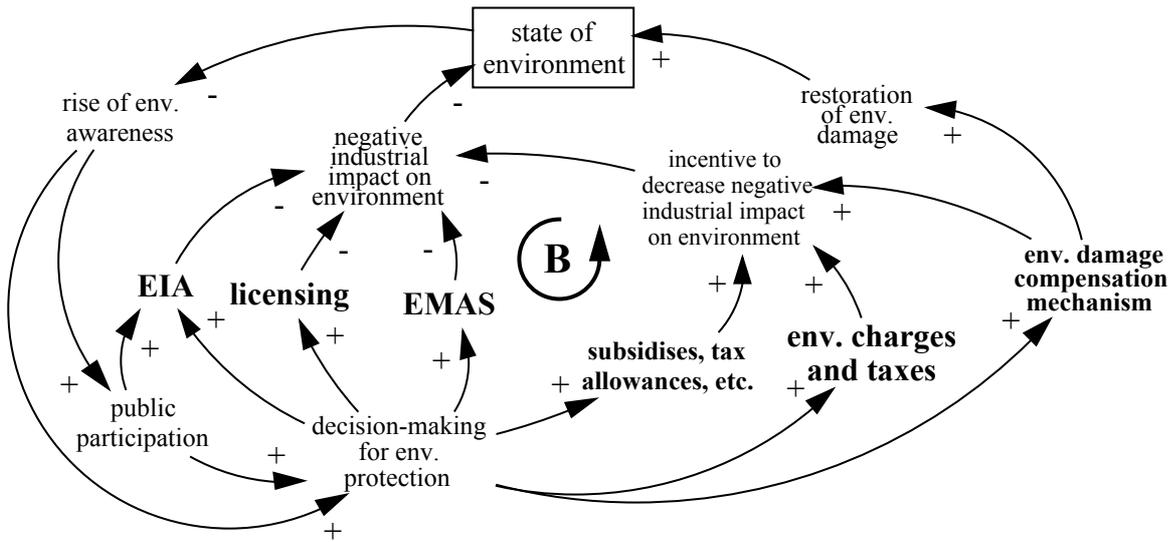
¹⁵ Modak P., Biswas A. (1999) *Conducting environmental impact assessment in developing countries*. New York: The United Nations University Press, p.12

¹⁶ Kiss A., Shelton D. (1997) *Manual of European environmental law*. p.136

¹⁷ Larrue C. The Political (Un)feasibility of Environmental Economic Instruments in *Environmental Policy in Search of New Instruments* (1995) by Dente B. Netherlands: Kluwer Academic Publishers. p.39

¹⁸ Kiss A., Shelton D. (1997) *Manual of European environmental law*. p.140

The influence of described above legal techniques on state of environment is illustrated by CLD 1.



CLD 1. Regulation of negative industrial impacts on environment by means of licensing, EIA, EMAS, environmental charges and taxes, subsidises and tax allowances, environmental damage compensation mechanisms.

3. Results

3.1 Industrial environmental legislation of Kaliningrad region, Russia

3.1.1. General characteristic of Kaliningrad region and its natural resources

Kaliningrad region of Russia is an enclave of Russia, which is located at southwest coast of the Baltic Sea. Its neighbours are Lithuania (north and east borders) and Poland (south border). Total square of the region is 15100 km², 2000 km² of it are covered with waters of Curonian and Kaliningrad bays, rivers and lakes. Kaliningrad region is inhabited by 948,5 thousands people (2000), 44.53% of population lives in the main city - Kaliningrad. The average density of population is 72 people per km² (2000)¹⁹. The landscapes are highly changed by human activity. Natural ecosystems occupy only 25% of the territory²⁰.

The main natural resources of Kaliningrad region, forming a base for industrial activity, are oil, amber, peat, construction materials. Kaliningrad region is also called “an Amber Coast of Russia” as 90% of amber world deposits are found in the region. Oil was explored on the territory of the region in 1963. In twenty years it was also found at the Baltic sea shelf. This is highly grade oil with sulphur content of 0.2%. Its industrial extraction started in 1975. Oil is delivered to Lithuania for further processing. Oil production comprises 800,000 tons annually. Peat deposits occupy more than 7% of the territory; its layer varies from 3-5 m to 12 m. The total volume is estimated over 3 billion m³. Peat is used as an organic fertilizer or for heating. The largest inland water reservoirs – Curonian and Kaliningrad Bays are rich in fish. Sprats, Baltic herring, plaice, cod and Baltic salmon are objects of industrial fishing in the waters of the Baltic sea²¹.

3.1.2. Industrial sector and its impact on environment

About 80% of the local industry is based in Kaliningrad city. Fishing industry, mechanical engineering, pulp and paper production, food production, coke production, extraction of natural resources (oil, amber, peat) are among the main branches of industry.

Industrial sector gives 28% of the total GDP of Kaliningrad region. 3604 industrial enterprises are registered here, including 1077 enterprises of chemical engineering, 86 of chemicals’ producing enterprises, 35 of heat producing enterprises, 41 enterprises of pulp and paper industry, 846 of food producing enterprises, 264 of clothes manufactures²². 47.1 thousand people were employed in industrial sector in 2000²³.

The production volumes was exceeded in 2001 in comparison with 2000 by the enterprises of food industry on 40.1%, building materials production on 30.8%, mechanical engineering and metal processing on 23.1%; wood, pulp and paper industry on 12.2%; light industry on 4.6%; energy production on 1.4%²⁴.

The main environmental problems, connected with industrial activity in Kaliningrad region, are atmospheric and water pollution, wastes, etc.

¹⁹ Kaliningrad region Committee on natural resources of the RF Ministry of Natural Resources. (2000). *Sostoyanie okruzhayushey prirodnoy sredi Kaliningradskoy oblasti v2000 godu*. [The state of environment in Kaliningrad region in year 2000]. Kaliningrad: OOO “Spiral”, p.6

²⁰ Krasnov E.V., Blazhchishin A.I., Shkizkij V.A. (1999). *Ecologija Kaliningradskoy oblasti*. [The environment of Kaliningrad region]. Kaliningrad: ”Jantarnij skaz”, p.95

²¹ Kaliningrad State University. (1997) *Adaptivnoe prirodopol’zovanie* (Ecologo-geographicheskie aspekti). [Adaptive nature management]. Kaliningrad: KSU, p.10

²² Kaliningrad State Committee of Statistics. (1999). *Jantarnij kraj na poroge XXI veka*. [The Amber region on the threshold of XXI century]. Kaliningrad: KSCS, p.71

²³ Kaliningrad Committee of State Statistics. (2001). *Socialno-ekonomicheskoe polozhenie Kaliningradskoj oblasti v 2000 godu*. [Social and economic State of Kaliningrad region in year 2000]. Kaliningrad: KSCS, p.11

²⁴ Kaliningrad Committee of State Statistics. (2002). *Socialno-ekonomicheskoe polozhenie Kaliningradskoj oblasti v 2001 godu*. [Social and economic state of Kaliningrad region in year 2001]. Kaliningradskaja Pravda, 7 February 2002, p.5

Atmospheric air. The release of polluting substances in 2000 from point sources in Kaliningrad region was 40.276 thousand tons, exceeding figures of 1999 on 7.317 thousand tons. 31.27% of released substances were caught by filters (27.4% in 1999). The highest degree of filtration was 75.8%. The best filtration was at wood-processing and pulp-and-paper enterprises. The lowest degree of cleaning was at transport and energy producing enterprises. The main input into atmospheric pollution resulted from energy production and providing of household services (51% of total pollution in 2000 and 56% in 1999); wood and pulp-and-paper industries (31% of total pollution in 2000 and 24% in 1999)²⁵.

Water. The total quantity of water, extracted from surface and underground waters, was 218.18 mln m³ in 2000. It exceeded level of 1999 on 21 mln m³. Increasing of water extraction derived from rising of industrial activity in the region: 50.8% of pumped water was spent on industrial purposes. Irrational water use, lack of recurring and cyclic water supply were the main reasons of clean fresh water losses, which comprised 15% of all pumped water²⁶. The main industrial consumers of water in the region are pulp-and-paper enterprises. The total water discharge in 2000 was 179.5 mln m³, which is more than in 1999 on 17.6 mln m³. It was caused by increasing of water use in industry. 152.3 mln m³ of total quantity of discharged water were classified as polluted. 22.1 mln m³ were released without purification. The main water discharges took place at the enterprises, providing household services (57%), and pulp-and-paper industry (39%)²⁷. Energy-producing enterprises release also water, resulting from cooling processes. These waters are considered to be clean and do not need to be purified, but they have higher temperature than environment and may cause changes in temperature regime of accepting water reservoirs, leading to alterations in water ecosystems. Water is recycled at these enterprises to very small extent though there is a big potential of installation of cycle-technologies. Mechanical engineering industry discharges sewages, which are not treated properly, into waters going to the Baltic Sea. The volume of discharged waters was 4.29 mln m³ in 2000, polluting water reservoirs with heavy metals, nitrogen, oil products, suspensions²⁸. The enterprises of food industry pollute water with organic substances, nitrogen, phosphate, etc. The potential of water treatment plants was 201.7mln m³ in 2000, which is more than in 1999 on 0.6 mln m³. In spite of the fact that potential of purifying facilities exceeds quantity of discharged water, the quality of water cleaning is very low. The majority of treatment plants have only a stage of mechanical cleaning or are out-of-date, do not correspond to environmental requirements, need reconstructions and repairing. Only 5% of discharged waters were processed through biological and chemical treatment in 2000²⁹.

Waste. There is no special landfill for safe storage of industrial wastes. Therefore, they are disposed either at the enterprises territory or at landfills for household wastes, occupying 42.3 ha. It results in soil contamination; losses of resources as some types of wastes can be recycled; fires at pulp-and-paper plants, where wood wastes are left at the enterprises territories, etc³⁰.

The following conclusions can be made. When industrial activity was depressed since 1990 till the middle of 1990s, the state of environment started to slightly improve due to ecosystems recovering. Surprisingly, even the most polluted river in the region Pregolya became almost clean due to significant reduction of pulp-and-paper enterprises' activity³¹. However, the period of depression was substituted by the period of industrial growth. Industrial growth led to improvement of economic situation in the region, increasing of regional budget due to taxes, social stability due to raised employment, wages and regional budget. Better social and economic situation in the region is favourable for further development of industry. But industrial growth endangers environment of the territory. State of environment started to deteriorate again, which can not be

²⁵ The Kaliningrad region Committee on natural resources. (2000).*The state of environment*. p.8

²⁶ The Kaliningrad region Committee on natural resources. (2000).*The state of environment*. p.10

²⁷ The Kaliningrad region Committee on natural resources. (2000).*The state of environment*. p.11

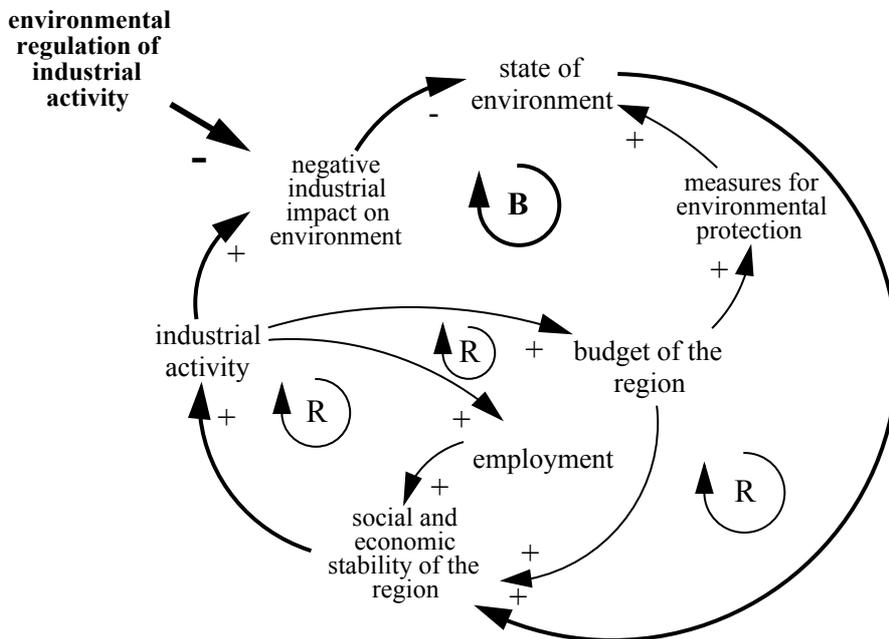
²⁸ The Kaliningrad region Committee on natural resources. (2000).*The state of environment*. p.96

²⁹ The Kaliningrad region Committee on natural resources. (2000).*The state of environment*. p.15

³⁰ The Kaliningrad region Committee on natural resources. (2000).*The state of environment*. p.103

³¹ Krasnov E.V. et al. (1999) *The environment of Kaliningrad region*. p. 113

good for community, which live here. Negative industrial impact on environment can be demolished by imposing stricter requirements on enterprises in sphere of pollution prevention and environmental protection. All said above is summarised in CLD beneath.



CLD 2. Interrelations between industrial activity, state of environment and social and economic stability in the Kaliningrad region

3.1.3. Federal and regional levels of legislation in Russia

The legislative power in Russia has two levels: federal and regional. Federal laws are considered to be the main ones (only the RF Constitution is above them). They establish general legislative framework for the whole country. On the other hand the Russian Federation consists of 89 regions. All these regions are different in size, population, geographical location, nature resources richness, level of welfare, industrial development. Regions have different fields of specialisation, for example, natural resources mining, forest industry, agricultural cultivation, machinery production, etc. Consequently different regions of Russian Federation confront different problems. Therefore every region has right to lay down its own laws, which should not contradict the federal legislation. On the other hand, if a law will turn to be good in practice, it can be implemented by another region confronting the same problem. Besides, successful regional experience can be taken into account at federal level during law-making process. The content of laws and other legal acts, approved by the regions of RF, depends on many factors as natural conditions of the territory, state of environment, economic development, etc³².

3.1.4. The main characteristic of Russian federal legislation

History of Russian-Soviet environmental law, including environmental legislation for industrial sector, is very different from Swedish and Danish paths. During Soviet time it was considered that nature had only utilitarian value. It was a strong belief that the state had huge and almost unlimited nature resources, vast spaces; so, there was no need to bother about scarcity of resources and vulnerability of environment. Economic development of the country was reached by huge and mainly irrational nature resources use. The Soviet environmental law was based on piecemeal approach, so different branches of legislation regulated environmental issues. As a rule, there were legal acts on use of particular natural resources, i.e. land, water,

³² Philippov P.S., Bojko T.M. (2001). *Socialno-ekonomicheskie problemi Rossii*. [Social and economic problems of Russia]. St-Petersburg: "Norma", p. 13

the Earth's interior, forests, etc. They were focused rather on resources' use than nature protection³³. Mechanisms of environmental damage compensation and restoration were not developed.

Russian environmental legislation has been built anew during last twelve years after breaking up of Soviet Union. Development of this branch of law was determined by changes in economic and social sectors, rising of environmental awareness, influence from the world community. The integrative approach to environmental protection gained popularity, leading to adoption of the RF Federal Law on Environmental Protection in 1991³⁴. Now Russian environmental law, including industrial environmental law, is closer to European, for example, to Swedish and Danish, but still a lot of changes are required.

The RF Constitution states that everybody has right on healthy and favourable environment.³⁵ This statement is supported by many legal acts. The main environmental legal document is the RF Federal Law on Environmental Protection. The first version of the law was adopted in 1991. Afterwards it was improved and the latest version of the law was adopted in 2002. This is a framework law, determining the main directions of environmental protection in Russia, including policy for environmental regulation of industrial activity. Besides, environmental aspects of enterprises' functioning are regulated by other federal laws, including the RF Federal Law on Environmental Expertise, the RF Federal Law on Wastes of Production and Consumption, some branch laws as the RF Federal Law on the Earth's interior, the RF Land Code, the RF Water Code, the RF Forest Code, etc. Besides, more detailed prescriptions and guidelines are given in legal acts, issued by the RF President, the RF Government, the Ministry of Natural Resources and the State Committee on Environmental Protection.

Licensing

The necessity of licensing of environmental aspects of industrial activity is set in different laws as the RF Federal Law on Environmental protection, 2002; The RF Federal Law on Wastes of Production and Consumption, 1998; The RF Federal Law on the Earth's interior, 1992; the RF Land Code; the RF Water Code. Licensing is based on piecemeal approach, where different licences are required for particular aspects of industrial production, though compliance of enterprise's activity with environmental requirements is mainly checked by the one authority – The State Board of Environmental Protection of MNR.

The details for licensing in sphere of environmental protection are regulated by the Decisions of the RF Government. They set the order of issuing licenses on utilisation, storage, movement, location, burial, destroying of industrial and other wastes, materials and substances (except radioactive substances); on pollution; on environmental passports; on certification; on environmental audit; on providing services for nature protection, etc.

Environmental impact assessment and environmental expertise

The RF Federal Law on Environmental Protection states that allocation of enterprises and other objects must take into account possible ecological, economic, demographical, moral consequences of planned activity³⁶.

As RF Federal Laws on Environmental Protection and on Environmental Expertise contain principle of presumption of potential danger for environment of any planned activity, EIA is carried out in order to prevent or decrease negative influence of an activity. EIA in Russia is mainly regulated by the three legal acts: the RF Federal Law on Environmental Expertise (1995), Instruction on environmental basement of economic and other activity by the Ministry of Natural Resources (1995) and the Order of State Committee

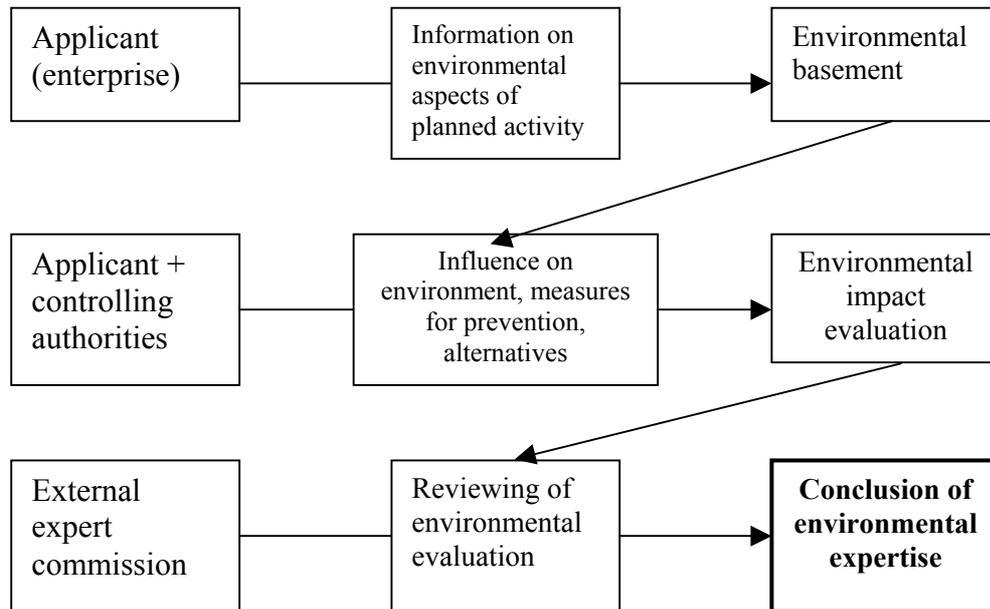
³³ Golichenkov A. (2001). *Environmental legislation of Russia: state and perspectives of development*. Bulletin "On the way towards sustainable development", 6, p.18-20.

³⁴ Kolbasov O. (1994) Russian Federation. In international encyclopaedia of laws. *Environmental law*. vol.5. Kluwer Law and Taxation Publishers, USA. p.15

³⁵ The Constitution of RF. (1993). Article 42.

³⁶ *The RF Federal Law. on Environmental protection* (2002) №7- FZ

on Environment on environmental impact evaluation of economic and other activities in RF (2000). The system is rather complex, as it is presented below.



Scheme 1. EIA system in Russia

Instruction on environmental basement of economic and other activity is approved by the Order of the RF Ministry of Natural Resources³⁷. These materials have to include data about location of object; characteristic of natural and historical conditions of the territory, assessment of its natural and economic value; short description of modern and future use of the territory according to schemes and programmes of development. Materials have to contain information about sources of impact on environment: building and construction processes; wastes with indicating the level of their toxicity; release of pollutants; physical pollution; recommended measures for nature protection which are based on the optimum levels of released substances.

At the stage of assessment of the territory, where a project is planned to be located, the level of knowledge about the place and sufficiency of available information about its historical development, state of environmental components; opportunities of nature use according to environmental potential of the territory and condition of ecosystems; predicted changes in nature and the consequences of these changes for humans must be evaluated. While choosing a territory the most preferable variant is one where planned activity will impose the minimal risk on environment.

In case of reconstruction of an enterprise it is necessary to supply information about changes in environment, which happened during the work period of an enterprise; reasons, caused these changes; planned measures to decrease negative effects and compensate environmental danger.

In case of liquidation of an enterprise or change in its specialization measures for restoration of environment must be planned and undertaken. Assessment of degradation of natural ecosystems and negative influence on human health, derived from activity of an enterprise, is required. An environmental basement must be written by an applicant itself.

Environmental impact evaluation follows environmental basement. The materials, required for future environmental expertise, are prepared at this stage. The final result of environmental impact evaluation comprises:

³⁷ The RF Ministry of Environmental Protection and Natural Resources.(1995).*Instrukciya po ekologicheskomu obosnovaniyu hozaystvennoy i inoy deyatelnosti*. [Instruction on environmental basement of economic and other activity]. №539

- information about impact on environment, imposed by planned activity; evaluation of environmental consequences and their importance; possibility to decrease the negative influence of activity;
- alternatives to planned activity;
- evaluation of social preferences in order to take them into account in decision-making process³⁸.

Degree of detailisation and completeness of environmental impact evaluation is determined by peculiarities of planned activity and has to be sufficient for evaluation of possible environmental and other consequences. Environmental impact evaluation is carried out by mainly an enterprise itself. The special authorities control the completeness and detailisation of the materials, which go to environmental expertise of the project.

Environmental impact evaluation includes public participation. NGOs can take part in discussions and data collecting. Short information about a project has to be published in official newspapers, bulletins or magazines. Additional information can be provided as well. Public opinions and recommendations are accepted during 30 days after publishing of materials on environmental impact evaluation. They have to be taken into account. Final materials are available for public during the period from documents approving till decision making³⁹.

The materials on environmental impact evaluation are sent to environmental expertise. Environmental expertise carries functions of preventive environmental control. Its procedure is regulated by the RF Federal Law on Environmental Expertise, the Decision of the RF Government on environmental expertise, and the Regulations on environmental expertise, approved by the RF State Committee on Environmental Protection.

There are two different types of environmental expertise: state and public expertises. State environmental expertise is steered by the RF Ministry of Natural Resources and its territorial units. They set a special commission for every object of environmental expertise. These commissions include specialists from the Ministry and independent external experts: scientists, engineers, etc. Expertise is paid by the organisations or persons, who initiate a project⁴⁰.

Commission determines whether planned activity fulfils requirements, which are set by the legal acts of RF and its territorial units; full size of possible predictable impact on environment, derived from planned activity; sufficiency of measures for environmental protection. Commission makes decision whether it is allowed to carry out planned activity or not. If project was rejected, results of environmental expertise have to contain information about necessity to add materials, sent to commission, according to suggestions and remarks of commission's members; or to state impossibility of project because it does not fulfil requirements for environmental safety. Project realisation is impossible without positive decision of environmental expertise.

There is a public environmental expertise apart from the state one. Citizens and NGOs have right to initiate a public environmental expertise of a project, if its realisation concerns environmental interests of the population of the territory. Public environmental expertise can be carried out before or at the same time as state environmental expertise. It must be registered by authorities, responsible for environmental expertise. Theoretically, the experts of public environmental expertise have access to the same sources of information as the experts of state environmental expertise. The decision of public environmental expertise is sent to the environmental expertise authorities. If they approve the decision, it comes into force. Public environmental expertise was introduced in order to raise objectiveness of environmental expertise and to increase public participation in decision-making process.

³⁸ The Order the RF State Committee of Environment. (2000) *Ob ocenke vozdeystviya na okruzhayuschuju sredu hozyastvennoy i inoy dejatelnosti RF* [On Environmental Impact Evaluation of economic and other activities in RF] №372.

³⁹ The Order of the State Committee. (2000) on *Environmental Impact Evaluation*.

⁴⁰ The RF Federal law. (1995). *Ob ekologicheskoy ekspertise*. [On environmental expertise] №174-FZ

Internal environmental control

Every enterprise is required to carry out internal control. It is obliged to have an environmental passport⁴¹. This document contains data describing the level of natural resources use by an enterprise and its influence on environment. An enterprise itself writes an environmental passport, which must be approved by enterprise's authorities and by the local environmental authorities. The document must contain:

- nature and climate characteristic of the area, where an enterprise is located, including: information about state of air, sources of water supply and water reservoirs, which accept discharged waters from enterprise;
- short characteristic of production process and products including mass-balances schemes, which allow to determine possible sources of wastes and pollution;
- description of local land resources;
- characteristic of raw materials, consumption of raw materials and energy per unit of production;
- releases to atmosphere, which is important for setting payments for atmospheric pollution;
- data on water consumption, water use and water purification, which is used for calculating payments for water pollution and water use;
- data on wastes, their disposal, etc.;
- information about accidental releases of polluting substances into air, soil, water, etc.;
- data on transport, used by an enterprise;
- information about measures for environmental protection, applied by an enterprise;
- total summary of all environmental charges, which are paid by an enterprise.

Environmental authorities as local departments of the State Board of Environmental Protection of MNR are obliged to check if information, provided by an enterprise in environmental passport, is correct.

Environmental management and audit

Russia does not have any specific schemes or standards for environmental management and audit. It mainly applies the ISO 14000 or the State Standard 14000, which is based on ISO 14000, but less complex than real ISO 14000⁴². The process of environmental management and audit development in Russia started in the end of 90s, when state authorities began education and licensing of environmental auditors. But certification on ISO 14 000 has not become common in the country. Only 14 enterprises had been certified on ISO 14000 since 1998 to the end 2001⁴³. Usually, they are big enterprises or enterprises with foreign capital.

Existing environmental legislation does not contain any legal acts on environmental audit, except requirements to licensing of organisations and persons, who get permission to conduct the procedure of environmental audit.

As it is stated in requirements to licensing of environmental auditors, the targets of environmental audit are:

- to substantiate an environmental strategy of an enterprise;
- to determine the priorities for an enterprise's activity for environmental protection;
- to check if an enterprise complies with environmental legislation;
- to investigate measures of decreasing of negative environmental impact from an enterprise and risk of accidents⁴⁴.

There are two types of environmental audit: compulsory and voluntary. Compulsory audit is necessary, if it is ordered by legal acts, for example in case of total assessment of sold enterprise or privatisation of state property. The RF Ministry of Natural Resources is responsible for system of environmental audit.

⁴¹ State Standard 17.0.0.04-90. (1990). *Ohrana prirodi. Ecologicheskij passport promishlennogo predpriyatija. Osnovnie polozhenija*. [Nature protection. Environmental passport of industrial enterprise. The main regulations]

⁴² Environmental Institute of Russian Academy of system researches (2002) *Sistema upravleniya ohranoy okruzhayushey sredoy*. [Scheme of environmental management] Available on-line: www.iso14000.ru/iso_i_gost.html [23 October 2002]

⁴³ Ecoline. (2002) *Obschestvennyy registr sertifikacii system ecologicheskogo menedzhmenta* [The public register of environmental management certification] Available on-line: www.14000.ru/register/ [23 October 2002]

⁴⁴ The RF State Committee of Environment (1998) *Prikaz ob ecologicheskoy audirovanii v sisteme Goskomecologii Rossii*. [Order on Environmental Audit in the system of the RF State Committee on Environment] №181

Environmental charges

The RF Federal Law on Environmental Protection lays down the charges for nature resources use, release of polluting substances into environment, waste disposal and other types of harmful influence.

Size of payment for pollution, waste disposal, other types of negative influence on environment, is determined by the special Decision of the RF Government⁴⁵. The following types of activities have to be paid:

- release of harmful substances to atmosphere from point and non-point sources,
- release of polluting substances into surface and ground water,
- waste disposal,
- other types of harmful influence (noise, vibration, electromagnetic and radioactive influence).

There are two types of payment for environmental pollution, including:

- payment for pollutants emissions, waste disposal and other types of pollution, if they do not exceed permissible limits;
- payment for pollutants emissions, waste disposal and other types of pollution, if they exceed permissible limits.

Besides, the RF Tax Code sets charges on use of the Earth's interior, on reproduction of natural resources, on additional incomes from mining of fossil fuels, on use of wild animals; use of forest and water⁴⁶.

Charges for environmental pollution and nature resources in Russia are not adequate to the size of real negative impact on environment caused by industrial activity. Therefore they have been highly criticised by environmentalists. Besides, the contradiction between the Guidelines for charges on environmental pollution, approved by the Decision of the RF Government, and the RF Tax Code has been found out in 2002. So, it is unclear if enterprises still should pay environmental charges according to both the Guidelines and the Tax Code, or they are obliged to pay only charges, set by the RF Tax Code⁴⁷. If the second will be true, the role of environmental charges for environmental protection will be even less, when it is now.

Environmental damage compensation

The RF Federal law on Environmental Protection contains a provision that the damage, caused to people or environment, must be compensated. The mechanism of compensation is described in the Methodical guidelines on evaluation and compensation of the damage, caused to environment due to environmental offences. According to these guidelines the assessment of damage is carried out according to existing legal acts, special methodological rules and cadastres. The environmental damage compensation can be done either voluntary or according to a court decision⁴⁸. Usually, the environmental authorities as the State Board of environmental protection of MNR initiate the damage compensation process.

In some cases environmental risks can be insured. There are special cases when environmental risks have to be insured as it is ordered by legal acts, for example, by the RF Federal Law on Industrial Safety of Dangerous Production, 1997, the RF Federal Law on Use of Nuclear Power, 1995. But these cases are rather exceptions when rule. Usually, the environmental risks are not insured, though there is an opportunity of the voluntary environmental insurance.

⁴⁵ The Decision of the RF Government. (1993) *Instruktivno-metodicheskie ukazaniya po vzimaniyu plati za zagryaznenie okruzhayushego sredi* [Guidelines for charges on environmental pollution] № 632

⁴⁶ *The RF Tax Code*, part 1(1998) №146

⁴⁷ Orkom Corporation (2002) *Plata za zagryaznenie okruzhayushego sredi*. [Charges for environmental pollution] Available on-line: <http://www.orkom.ru/service/support/nalychet/june2002/sreda/> [30 October 2002]

⁴⁸ The State Committee on Environment (1999) *Metodicheskie ukazaniya po ocenke i vozmescheniyu vreda, nanesennogo okruzhayushego srede v rezultate ekologicheskikh pravonarusheniy* [The Methodological guidelines on evaluation and compensation of the damage, caused to environment]

Mechanisms, supporting cleaner production

Though some subsidises and possibilities of favourable conditions in case if an enterprise uses resource-saving and low-wasted technologies and alternative sources of energy are claimed in the RF Federal Law on Environmental Protection, these provisions are vague and are not applicable in real life.

3.1.5. Regional industrial environmental legislation of Kaliningrad region

There is no special law on industry at Kaliningrad region. The law on industrial policy was considered and discussed by the Regional Duma, but it has not been approved. Some norms, concerning environmental aspects of industrial activity in the region, are contained in other regional laws.

The main regional environmental law is the Law of Kaliningrad region on Environmental Policy in Kaliningrad region № 133, approved by the Regional Duma on 11 February 1999. This law sets legislative framework for environmental policy, aiming at sustainable development of Kaliningrad region. Some law's provisions directly concern industrial development as economic mechanisms of environmental policy, which include: reduction of taxes, low-interest credits and other benefits. Economic benefits are granted in case of:

- a) rational use of non-renewable natural resources, investments of part of the obtained profit into recovering of renewable natural resources according to existing legislation;
- b) installation of environmentally safe technologies;
- c) investments into environmental projects and programs;
- d) use of renewable natural resources (biofuel, wind- and hydro-energy) instead of non-renewable;
- e) increasing of reusing and recycling of wastes, reduction of waste per the production unit.

Economic penalties are used in case of:

- a) activity, leading to worsening of environmental quality;
- b) use of resource-spent technologies.

This Law is criticized for absence of practical mechanism of the law implementation. It is a common problem of the all Russian legislation, which is quite good on paper but has been weakly implemented. Besides, this Law is considered to be a framework law. That is why a lot of provisions, which are contained in the Law, are not precise and do not have mechanism of realization⁴⁹.

There is a need in regional environmental law improvement. It became one of the main tasks of Swedish-Russian project ECOMAN which aimed at development of legal base for environmental policy in the region, interaction between different authorities, enterprises, NGOs in sphere of rational nature resources use and environmental protection. One of the results of the project is the Environmental Doctrine of Kaliningrad region, which was sent to the Regional Duma for discussion and approval in 2002. It developed questions, which were touched by the Law on Environmental Policy.

Doctrine suggests several ways for improvement of environmental performance in industrial sector. The first one concerns sustainable use of non-renewable resources, envisaging more efficient use of resources; reorientation from raw materials export to their processing at the territory of the region; setting of the adequate payment for nature resources use on the basis of complex environmental, economic and social assessment of the territory; and complex use of resources deposits, including processing of dumps. Another way is wider use of renewable natural resources. The third way is titled "Decreasing of environmental pollution", which includes more sustainable energy production and consumption through decreasing of energy use per unit of production and development of alternative sources of energy. The next way is more sustainable development of industry, including assistance of BAT implementation through economic mechanism and environmental expertise; assistance to development of resource-saving and low-waste technologies; promotion of use of secondary materials and wastes in production process; producer's responsibility for a product life cycle.

⁴⁹ *Problem zones in environmental policy of Kaliningrad region.* (2001) Kaliningrad: ECOMAN, №3

In spite of all good provisions, stated in this proposed Doctrine, it is one more framework document without any practical mechanism of its implementation. It suggests development of new legal acts on environmental taxes and charges; compensation of damages to human health and environment; environmental audit; environmental insurance, but these are still plans, which are quite far from the practical realisation⁵⁰.

There are also some other Laws, which contain norms of environmental regulation of industrial activity. For example, the Kaliningrad region Law on Use of the Earth's interior for Mining of Common Natural Resources and Building of Underground Constructions at the territory of Kaliningrad region №57 came into force on 10 July 1996. It determines the responsibility of state authorities, which will assess natural resources deposits. It lays down payment for restoration of natural resources, which comprises 5% of total cost of natural resources. This payment goes to the regional budget. Payment for the Earth's interior use includes payment for exploring and assessment of deposits, mining and building of constructions, which are not connected with natural resources mining. This charge goes to budget of local municipal units of Kaliningrad region, where mining process takes place. Besides, users of natural resources deposits must pay other taxes and charges, stated by the federal legal acts. State control has to check if natural resources are used rationally, if BAT is used during mining process and building of underground constructions. Organisations, undertaking mining of natural resources, are responsible for lands reclamation; effective measures for prevention of pollution by harmful substances, wastes of production and consumption, sewage waters; fulfilling requirements on environmental quality; measures for water, land and the Earth's interior protection, nature resources reproduction.

Another law containing environmental requirements for industrial sector is the Kaliningrad region Law on Wastes of Production and Consumption № 108, which came into force on 10 January, 1999. Its Article 3 is called "The main principles of environmental policy of Kaliningrad region in sphere of waste management" and includes principles as, for example:

- complex use of raw materials, introduction of low-waste and waste-less technologies, neutralization of dangerous wastes;
- presumption of danger of any economic activity, connected with wastes production.

Juridical persons and enterprises, which deal with activity leading to wastes production, are obliged to:

- prevent and decrease wastes through use of resource-saving, low-waste and waste-less technologies;
- make inventory of wastes and their disposal;
- investigate sources of wastes and send reports to statistical organs;
- provide special authorities with required information on wastes;
- collect produced wastes, dispose them in special places or transmit to the special organisations, which have licences on waste management;
- ensure re-processing, utilization and neutralization of wastes;
- prevent disposal, destruction of wastes, which may be used as secondary raw materials for processing.

Juridical persons and enterprises, which deal with activity involving dangerous waste production, must:

- ensure population and environmental safety from harmful influence of dangerous wastes;
- have passport on dangerous wastes.

Economic stimulation in field of waste management includes:

- reduced payments on waste disposal, if enterprise uses measures, aiming at wastes reduction;
- favourable credits to enterprises, undertaking measures for waste production decreasing;
- regional tax concession for enterprises whose main activity is waste processing, development of technologies and equipment production for wastes utilisation.

The law partly duplicates the RF Federal Law on Wastes of Production and Consumption. Some articles as article on economic stimulation was deeper developed in regional law than in federal law. But the Law does not have mechanism of practical implementation of its economic stimulation proposals⁵¹.

⁵⁰ Guseva R. (15 July 2002) Personal interview

⁵¹ Tkachev V. (20 July 2002) Personal interview

3.2. Characteristic of the main EU legal acts, concerning environmental regulation of industrial activity

The European Union environmental law is found in the EC Treaty, the directives, regulations and decisions adopted by the Community's institutions, the international agreements which EC has ratified and the case law of the European Court and the Court of the First Instance⁵².

The EC Treaty states a high level of protection and improvement of the quality of environment as one of its objectives. Therefore its Article 174 provides basis for environmental policy of the Union⁵³. It claims importance of precautionary principle and necessity of preventive action, i.e. that environmental damage should as a priority be rectified at source and that the polluter should pay.

EC has adopted several directives, setting environmental requirements to enterprises. Directives are the most common form of EC legislation. To fully comply with directives member states have to:

- pass national laws which give full effect to the directive within the timetable laid down in the directive itself (usually during 2 years after the directive's adoption),
- make sure that these laws are complied with in practice.

Member states can decide for themselves what methods to use to achieve the result laid down in the directive, however, taking into account decisions of the European Court of Justice⁵⁴.

Environmental impact assessment

A Directive on the assessment of the effects of certain public and private projects on environment was adopted in 1985 and substantially amended in 1997. It applies to public and private projects, which are likely to have significant effects on environment. The Directive sets requirement of the prior assessment of the likely significant environmental effects of these projects. Besides, projects belonging to certain types of activity, which have significant effects on environment, must, as a rule, be subject to systematic assessment. This assessment is done in order to protect human health, to improve environment and the quality of life, to maintain biodiversity and the reproductive capacity of the ecosystem as a basic resource for life.

EIA implies identification and description of the direct and indirect impacts of a project on the following objects:

- human beings, fauna and flora,
- soil, water, air, climate and the landscape,
- the inter-action between the factors mentioned in the first and second indents,
- material assets and the cultural heritage⁵⁵.

The developer of assessment must provide information, including a description of the project; a description of the measures to avoid, reduce and remedy significant adverse effects as well as the data required to identify and assess the main environmental consequences, imposed by the project.

Description of the project comprises:

- a description of the physical characteristics of the whole project and the land-use requirements during the construction and operational phases,
- a description of the main characteristics of the production processes, for instance, nature and quantity of the

⁵² Gillies D.(1999) *A Guide to EC environmental Law*. Earthscan Publications Ltd, London, p.11

⁵³ Treaty establishing the European Community. *Official Journal C 340, 10.11.1997*

⁵⁴ Gillies D. (1999) *A Guide to EC environmental Law*. p.12

⁵⁵ Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment. *Official Journal L 175 , 05/07/1985 P. 0040 – 0048*

materials used,

- an estimate, by type and quantity, of expected residues and emissions, resulting from the operation of the proposed project.

Another important part of the project description is discussion of possible alternatives to the project, where appropriate. Description of effects of the project on environment must be full and diverse, including influence on population, fauna, flora, soil, water, air, climate, material assets, cultural heritage, landscape and the inter-relationship between the above factors. The Member States are obliged to develop a scheme of informing public, who might be concerned about the project.

Directive 85/337 has been implemented in all Member States. A particular problem is the application of the Directive's requirements in practice: in 1996 the Commission mentioned that most of the complaints, petitions and infringement procedures, which it dealt with, concerned Directive 85/337.

The main problems of the Directive are:

- its loose drafting often lead to the non-application of some of its principles;
- the administration is not in any way obliged to avoid and/or minimise the negative effects on environment⁵⁶.

Environmental auditing

In 1993 the Council adopted Regulation 1836/93, which established a voluntary system of eco-management and auditing for industrial installations (EMAS), which was substituted in 2001 by the new version. An industrial company, which wishes to participate in the scheme, must establish an environmental policy for that site resulting in constant improvement of environmental performance of a company.

EMAS is established for the evaluation and improvement of the environmental performance of organisations and the provision of relevant information to the public and other interested parties⁵⁷. EMAS aims at continual improvements in the environmental performance of organisations by establishment of environmental management systems; the systematic, objective and periodic evaluation of such systems; provision of information on environmental performance and an open dialogue with the public; the active involvement of employees.

Though participation in EMAS is voluntary, an organisation, willing to be registered under EMAS shall:

- Conduct an environmental review of its activities, products and services;
- Carry out environmental auditing;
- Prepare an environmental statement.

In order for an organisation to maintain registration to EMAS it shall have the verified environmental management system and audit programme and annually forward updated environmental statement to the competent body and make it publicly available.

Member States shall promote organisations' participation in EMAS, particularly, by involvement of small and medium-sized enterprises through facilitating access to information, support funds, public institutions and public procurement; establishing or promoting technical assistance measures, ensuring that reasonable registration fees encourage higher participation.

Organisations, implementing EMAS, shall address the following issues:

- Legislation: knowledge and compliance with corresponding environmental legislation;
- Performance: environmental policy of an organisation shall really improve its environmental performance;

⁵⁶ Krämer L. E.C. (2000) *Environmental Law*. London: Sweet&Maxwell, p.114

⁵⁷ Regulation (EC) No 761/2001 of the European parliament and of the council of 19 March 2001 allowing voluntary participation by organisations in a Community eco-management and audit scheme (EMAS) *Official Journal L 114* , 24/04/2001 P. 0001 - 0029

- Communication with public and interested sides;
- Involvement of employees into the process of improvement of environmental performance of an organisation.

An organisation shall consider all environmental aspects of its activities, products and services and decide, which of its environmental aspects have significant impact. It is a basis for setting its environmental objectives and targets. These aspects include direct environmental impacts as emissions to air, releases to water, wastes, use and contamination of land, use of natural resources and raw materials, transport issues, risk of environmental accidents, influence on biodiversity, etc. Indirect environmental aspects can include product related issues (design, LCA, etc.), investments and loans, new markets, decisions, environmental performance of suppliers and contractors. Organisations must be able to demonstrate that the significant environmental aspects associated with their procurement procedures have been identified and that significant impacts associated with these aspects are addressed within the management system.

For the participating company there are clear advantages in the environmental performance and its improvement: better motivation of the personnel and improved competitiveness.

Integrated Pollution Prevention and Control

Traditionally, laws relating to the control of environmental pollution have treated each sector of environment separately. In 1996 the EC adopted a new approach. The purpose of new Directive was to achieve integrated prevention and control of pollution arising from the some types of activities⁵⁸. It lays down measures designed to prevent or, where that is not practicable, to reduce emissions in the air, water and land from the activities, including measures concerning waste, in order to achieve a high level of protection of environment taken as a whole.

The competent authorities shall ensure that installations are operated in such way that:

- a) all the appropriate preventive measures are taken against pollution, in particular through application of the best available techniques;
- b) no significant pollution is caused;
- c) waste production is avoided; where waste is produced, it is recovered or, where that is technically and economically impossible, it is disposed of while avoiding or reducing any impact on the environment;
- d) energy is used efficiently;
- e) the necessary measures are taken to prevent accidents and limit their consequences;
- f) the necessary measures are taken upon definitive cessation of activities to avoid any pollution risk and return the site of operation to a satisfactory state.

It shall be ensured that no new installation is operated without a permit issued in accordance with this Directive. The application to the competent authority for a permit includes a description of:

- the installation and its activities,
- the raw and auxiliary materials, other substances and the energy used in or generated by the installation,
- the sources of emissions from the installation,
- the conditions of the site of the installation,
- the nature and quantities of foreseeable emissions from the installation into each medium as well as identification of significant effects of the emissions on environment,
- the proposed technology and other techniques for preventing or, where this not possible, reducing emissions from the installation,
- where necessary, measures for the prevention and recovery of waste generated by the installation,
- further measures planned to comply with the general principles of the basic obligations of the operator,
- measures planned to monitor emissions into environment.

⁵⁸ Council Directive 96/61/EC of 24 September 1996

Besides, permit conditions for the activity must be constantly updated. The permit is fully coordinated, which requires involvement of more than one competent authority, in order to guarantee an effective integrated approach by all authorities competent for this procedure.

The permit shall include emission limit values for pollutants. If necessary, the permit shall include appropriate requirements ensuring protection of the soil and ground water and measures concerning the management of waste generated by the installation. The emission limit values and the equivalent parameters and technical measures shall be based on BAT, without prescribing the use of any technique or specific technology, but taking into account the technical characteristics of the installation concerned, its geographical location and the local environmental conditions. In all circumstances, the conditions of the permit shall contain provisions on the minimization of long-distance or transboundary pollution and ensure a high level of protection for the environment as a whole. If installations are changed, the competent authorities must be informed and permits are to be updated. The issued permits are subject for updating and change, if it is necessary.

Categories of industrial activities, which are subject of this directive, include: energy industries, production and processing of metals, mineral industry, waste management, some food-producing enterprises, wood, pulp-and-paper industries.

The Sixth Environmental Programme

The Sixth Environmental Programme of European Commission sets new objectives and strategies in the field of environmental protection in EU for nearest 10 years⁵⁹. Some of them concern industrial enterprises. The Programme sets as objectives improvement of resources use efficiency, dematerialisation of economy, and waste prevention in order to ensure that the consumption of renewable and non-renewable resources does not exceed the carrying capacity of environment.

As the Programme states, the approach towards business has largely revolved around setting standards and targets and then ensuring companies comply with these standards. Member States, however, have increasingly supplemented this with market-based instruments, such as environmental taxes on different products, which aim to change the price signals in the market place in favor of more environment-friendly products, processes and services. The use of other economic instruments such as tradable permits to encourage the uptake of resource-efficient technologies, products and services is mentioned in the Programme as well.

Within the framework of the proposed Integrated Product Policy (IPP) approach, the Commission will address ways to improve the environmental performance of products throughout their life cycle. The aim shall be to satisfy consumer demand with less resources and lower hazards and risks to the environment and prevent waste generation at source.

Another direction of European Commission work is encouragement a wider uptake of the Community's EMAS, especially by small- and medium-sized companies.

⁵⁹ Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the regions on the sixth environment action programme of 'Environment 2010: Our future, Our choice', Brussels, 24.1.2001 COM (2001) 31 final 2001/0029 (COD)

3.3. Environmental industrial legislation in Denmark

Short description of Danish environmental industrial legislation

The most important sources of Danish environmental law are to be found in the EU environmental law and in the public statutory rules approved by the Parliament. Environmental law in Denmark is a very comprehensive system of rules.

The main legal document in field of environmental protection is the Environmental Protection Act. The Guidelines, issued by Danish Environmental Protection Agency, contain general interpretations of acts and statutory orders and also offer some recommendations. They are not binding, but consultative. Policy plans as well as physical plans are very important sources of environmental law. Bans, orders and annulments of previous approvals/permits are also a part of Danish environmental law system⁶⁰. The Minister of Environment issues the Ministerial Ordinances under the legal acts as the Environmental Protection Act, which are legally binding.

The first Environmental Protection Act was introduced in 1973. It was primarily aimed at industry. The basic idea how to regulate industry was copied from Sweden. In essence, the idea is that one draws up a list of the most polluting activities and then stipulates individualised requirements for various enterprises.

With the new Act, industry became a subject to industrialised environmental requirements. An effective administrative apparatus was built up consisting of several hundreds full-time employees: the Environmental Protection Agency, technical administrative divisions in the counties and municipalities. Without this apparatus, the new rules would be just an ineffective gesture⁶¹.

Right from the start, Denmark has cherished the polluter pays principle. The principle is in harmony with what the EC recommended to Member States in 1975. In the Environmental Protection Act interpretation it means that environmental requirements can be imposed upon enterprises, and that companies have to pay whatever costs these entail. But it is only preventative requirement, which does not include liability issue. In theory, in some extraordinary cases environmental requirements could even force an enterprise to close completely, but it is not a common measure. The polluter pays principle currently applies to all Danish industry without exception. Besides, in Denmark as in other Western countries, the view rapidly developed that requirements to new enterprises should be determined according to what can be achieved utilising BAT. Another principle used in Danish environmental industrial law is a precautionary principle. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

The environmental requirements imposed on industry are determined by individual rulings; in practice, however, it is not necessary to determine what is BAT in every single case. The majority of cases are encompassed by the Danish EPA Guidelines, and the requirements stipulated in them are usually considered as reflecting results that can be achieved using BAT. The Danish EPA Guidelines thus play an important role in this system. The Guidelines have been developed after thorough consensus-like negotiations with the involved parties, including industrial sector. However, even though the Guidelines are followed very closely, there is still some room for flexibility, something that would be missing if the same general rules were applied to everyone⁶².

Licensing

One of the ideas that Denmark assumed from Sweden was that one should have a list of “particularly polluting enterprises”, and that new enterprises on this list should apply for environmental approval. The

⁶⁰ Basse E.M. (1999). *Denmark*. In Environmental encyclopaedia of laws. London: Kluwer Law International, p.62

⁶¹ Moe M. (1995) *Environmental Administration in Denmark*. Danish Environmental Protection Agency, p.63

⁶² Moe M. (1995) *Environmental Administration in Denmark*. p.64

Environmental Protection Act serves as a basis for environmental licensing system in Denmark. The current licensing system was defined in the 1991 Environmental Protection Act and its statutory orders. Environmental permits are compulsory for the larger polluters, the so-called “listed” facilities, which is about 10 000⁶³.

Annexes of the Environmental Protection Act include list of enterprises, which are subject to licensing. After 1 January 1992, when the second Environmental Protection Act came into force, all enterprises included in the list had to get a licence for the activity going on in the firm. Applications shall be accompanied by the plans, drawings and descriptions required to evaluate the project, and by an indication of the nature and scope of the actual or anticipated pollution. Section 41 of the Act gives the enterprises having licence a legal protection against new environmental requirements. Eight years following the issuance of an approval according to Chapter 5 of the Act an order on prohibition of activity can only be issued if:

- new information has come forward regarding the harmful effects of the pollution in question;
- the pollution causes environmental damage, which could not be foreseen when the approval was issued;
- the pollution otherwise exceeds the conditions of the approval considerably.

The Environmental Protection Act does not state the criteria for how local or regional authorities should decide whether or not to grant approval. The first chapter of the Act states the basic principles for location, pollution prevention and precautionary measures and the decision-making authorities are obliged to base their decisions on these principles. The analysis made by the councils must take into account all types of pollution caused or expected to be caused by the applicant. The approval contains the system of conditions, regulating the environmental aspects of the enterprises’ functioning.

The polluter is required to give information to the authorities, including data on economy and accounts relevant to the evaluation of the pollution and to the choice of possible remedial or preventive measures. All the expenses are borne by the polluter⁶⁴.

Existing listed enterprises, which do not hold an approval, shall make application to the approval authority. On the basis of the application and an evaluation of aspects of operation and pollution from the listed activity the approval authority decides whether the activity can be approved, or whether a notice shall be issued directing it to take measures to reduce pollution from the activity or whether a prohibition notice shall be issued against continued operation or specified processes.

The Ministry lays down rules on review of applications for approval of existing enterprises, and on time limits for considering the applications by the approval authority⁶⁵. Not all enterprises are subject of strict requirements during licensing process. Some of the requirements apply only to enterprises with poor environmental performance.

According to the Danish Environmental Protection Act separate licences are required for some types of activities, for example, for releasing of polluting substances, products and materials into the ground, etc., or for discharging of wastewater.

Integrated pollution prevention and control

The Minister on 21 January 1998 presented a bill on amendments to the Environmental Protection Act to the Parliament, which reflected very narrow implementation of the new EC Directive on Integrated Pollution Prevention and Control (IPPC Directive 96/61/EF). The Directive regulates new polluting enterprises for which a permit is granted, later than 1 November 1999, and existing enterprises by 1 November 2008⁶⁶. The

⁶³ *Environmental performance reviews. Denmark. OECD*, France 1999, p. 134

⁶⁴ Basse E.M. (1999). *Denmark*. p.79

⁶⁵ *Consolidated Environmental Protection Act*, №698, 1998, Section 39

⁶⁶ Basse E.M. (1999). *Denmark*. p.77

complete enforcement of the IPPC Directive requires some changes both in Danish law and in its administrative system. Denmark formally implemented IPPC Directive in 1999.

Environmental impact assessment

Danish regulations on EIA were adopted in 1989 and 1994, in order to implement the 1985 EU directive on EIA. EIA in Danish legislation is mainly regulated by the Planning Act, 1999, the Ministerial Order on supplementary rules pursuant to the Planning Act, 2000, and by some other acts. The EIA of a project must demonstrate, describe and assess the direct and indirect effects of the project on the following factors:

- human beings, fauna and flora;
- soil, water, air, climate and the landscape;
- material goods and the cultural heritage;
- the interaction between these factors⁶⁷.

The EC does not stipulate rules as to the placement of enterprises. However, the EC's EIA Directive 85/337 lays down a number of rules as how the decision-making process prior to placement shall proceed⁶⁸. Danish Environmental Protection Act states that when choosing such site consideration shall be given to the nature of the area, including present and planned future uses, and to the possibilities for appropriate disposal of wastewater and waste⁶⁹. It should be marked that in 1999 the system of EIA in Denmark was revised and put into correspondence with EC requirements.

Internal environmental control

Internal control is understood to mean that enterprises are legally bound to keep record or undertake measurements such that the environmental authorities can base part of their supervision on internal control by the enterprise. Internal control and environmental management are well suited to being combined – the better the enterprise's environmental management, the less will be the need for inspection by the authorities⁷⁰. In 1996 Denmark introduced a requirement for the majority of listed enterprises to draw up environmental accounts. The Minister can lay down rules on the duty of listed activities periodically to prepare them. The statement of environmental accounts shall give the following introductory particulars:

- 1) Name and location of company.
- 2) Environmental supervision authority (local/regional council).
- 3) Industrial sector, primary activities.
- 4) Information on significant secondary activities.
- 5) Information on most significant environmental approvals granted to the company.
 - 1) Date of overall approval of the company, where relevant.
 - 2) Brief qualitative indication of the most significant resource and environment parameters characterizing the primary activities of the company and the secondary activities, where relevant⁷¹.

The statement of accounts shall indicate the significant consumption of energy, water and raw material and the type and quantity of pollutants etc., forming part of the production process, which are discharged from the enterprise to air, water and soil, or form part of products and waste. A statement of accounts shall cover one year and be submitted to the supervision authority and to the Danish Commerce and Companies Agency. For enterprises covered by the Danish Companies Accounts Act, the statement of accounts shall be submitted to the Danish Commerce and Companies Agency together with the financial statement⁷². The Minister lays down detailed rules on the preparation of internal control accounts, including involvement of staff members, submission to the authorities within specified time limits, and publication of green accounts.

⁶⁷ Ministry of Environment and Management, Denmark; Spatial planning department. *Ministerial order on supplementary rules pursuant to the planning Act*. March 2000, §5.

⁶⁸ Moe M. (1995) *Environmental Administration in Denmark*. p.71

⁶⁹ *Consolidated Environmental Protection Act*, №698 of September, 22, 1998, Section 4.

⁷⁰ Moe M. (1995) *Environmental Administration in Denmark*. p.81

⁷¹ Ministry of Environment and Energy, Danish EPA: Statutory order from the Ministry of Environment and Energy, №975 of December 13, 1995, *on the duty of certain listed activities to draw up green accounts*, Section 5-1

⁷² *Consolidated Environmental Protection Act*, №698, 1998, Section 35a

The Minister laid down detailed rules that enterprises or associations of enterprises committing themselves to introducing environmental management systems might be allowed to defer submission of the first statement of environmental accounts for a specified period, however not later than three years from January 1, 1996. The Minister also lays down detailed requirements for the environmental management system and annual submission of material to the Danish Commerce and Companies Agency and the supervision authority documenting that the system has been implemented in the enterprise⁷³.

The requirement for an environmental account is as yet specifically Danish, but is inspired by the environmental management systems and the voluntary EC eco-management and audit scheme (Council Regulation 1836/93)⁷⁴.

Environmental management and audit

Denmark does not have special legal acts on eco-management and audit⁷⁵. Enterprises can be certified either on ISO 14 000 or apply for EMAS, introduced by EC Regulation 761/2001.

Taxes and charges

Economic instruments for the regulations of the environment were not so popular at first in Denmark. They were not used as incentives for business until the first environmental reform in the beginning of the 1970s. In 1987 an act was adopted which laid down some common rules for taxes on wastes.

Several new acts placed special taxes on sulphuric fuel, CFCs, CO₂ tax for enterprises and households. In June 1993 the Parliament accepted a comprehensive tax reform, which included a substantial package of new energy taxes as well as green taxes. In May 1995, the Government presented "The Danish Energy Reform – Green taxes". It is anticipated, that the use of economic instruments as green taxes will lead to the development of cleaner technologies, to more initiatives by the industries themselves, and to more conscious use of raw materials, energy, etc⁷⁶.

The main objective of green taxation is a gradual shift in the balance of tax system away from income tax towards green taxes. This shift involved a gradual increase in green taxes to 1.2 % of GDP by 2000. Existing green taxes such as excise taxes and CO₂ taxes, and taxes on waste, were increased. A number of new green taxes were introduced, notably a water tax, a tax on SO₂ emissions and a tax on waste water discharges. One fundamental principle of the green tax is that it should be revenue neutral, while still providing incentive for improvement of environmental protection⁷⁷.

Industry is affected mainly by the waste water, CO₂ and SO₂ taxes. In the longer term, it also benefits from reduced marginal income tax rates as a result of lower pre-tax wage pressure. Revenue from the green taxes affecting industry is recycled through investment support grants and reduction in employers' social contributions. As a result of the green tax reform and the growing use of environmental charges and taxes in Denmark, total revenue from environmental charges and taxes increased from DKr 2600 million in 1992 to 7800 million in 1997, or 0.74 of GDP. Most of the additional revenue was due to increase in CO₂ taxes (DKr 4050 million in 1997), the new SO₂ tax (DKr 375 million) and the drinking water tax (DKr 1279 million)⁷⁸. However, though the Danish green taxes and energy taxes are meant to influence the behaviour of enterprises and individuals they are first and foremost a source of finances for public environmental activities. Still, they are often too insignificant to influence seriously behaviour of enterprises or they are levied within an inadequate incentive structure⁷⁹.

⁷³ *Consolidated Environmental Protection Act, №698, 1998, Section 35a*

⁷⁴ Moe M. (1995) *Environmental Administration in Denmark*. p.82

⁷⁵ Moe M. (1995) *Environmental Administration in Denmark*. p.66

⁷⁶ Basse E.M. (1999). *Denmark*. p.24

⁷⁷ *Environmental performance reviews. Denmark*. (1999) p.138

⁷⁸ *Environmental performance reviews. Denmark*. (1999) p.139

⁷⁹ Basse E.M. (1999). *Denmark*. p.23

Service charges in the environmental area comprises around DKK 9,000 million annually, with an even greater sum being collected in the form of environmental levies. Service charges are payments, made for specific services, e.g. the disposal of sewage or the supply of tap water. The primary function of service charges is to share the cost of the activity in question in reasonable manner. Levies are sums collected by the public authorities in connection with certain goods or activities, without something specific being provided in return. Environmental levies are levies that are in some way or other related to the environment⁸⁰.

Overall, the polluter pays and user pays principles are applied in Denmark with respect to industry; no significant subsidies are provided for pollution abatement and control. Revenue from environmental charges and taxes in the mid-1990s covered public pollution abatement and control expenditure. Innovative projects have been supported under the successive cleaner technologies programs, most recently for product-oriented activities; subsidies amounted to DKr 75 million in 1996⁸¹.

Environmental damage compensation

In case of breaking the Environmental Protection Act regulations; disregard of terms of a permit, derogation or an approval issued under the Environmental Protection Act; restriction of information availability or submitting of false information, the enterprise is a subject of penalty setting or even criminal liability. Where violations gave rise to profits, this income is confiscated, even if violation did not result in damage to environment or risk of damage.

Mechanisms, supporting cleaner production

The vision of cleaner technology is one that is shared internationally. It is reflected in wide spreading of environmental audit, which has been discussed above. Another important tool is a life cycle assessment. LCA has not been incorporated as environmental requirement, though it is actively developing.

Environmental Protection Act claims importance of the composition and design of the goods or products having the following characteristics:

- 1) the lifetime of the goods or products is as long as possible,
- 2) the goods or products can be recycled to the greatest possible extent, and
- 3) in connection with their final disposal, the goods or products do not cause pollution or other environmental impacts⁸². It will not be easy, however, to convert LCA to environmental requirements. Besides, many goods are imported and in the case of imported goods much of the environmental impact occurs in countries other than Denmark⁸³.

The Environmental Protection Act states the priority of the results achievable by using the least polluting technology, including least polluting raw materials, processes and plants and the best practicable pollution control measures. In this evaluation special consideration shall be given to preventive measures in the form of cleaner production⁸⁴.

To promote recycling and cleaner technology and minimize waste disposal problems, the Environmental Protection Act permits Minister to lay down special rules. However, rights of Ministry are restricted, when it deals with imported products and materials.

It is interesting that Environmental Protection Act envisages opportunity of financial aid to enterprises, dealing with cleaner production projects. Support can be granted to research and development projects and to knowledge transfer and information activities; to the projects aiming at reducing the impact on the environment in connection with development, production, selling or use of products or in connection with management of the

⁸⁰ Moe M. (1995) *Environmental Administration in Denmark*. p.159

⁸¹ *Environmental performance reviews. Denmark*. (1999) p.139

⁸² *Consolidated Environmental Protection Act, №698 (1998) Section 35a*

⁸³ Moe M. (1995) *Environmental Administration in Denmark*. p.66

⁸⁴ *Consolidated Environmental Protection Act, №698 (1998) Section 3*.

waste generated in the product's entire life cycle; to investigations and development of methods, tools, processes, production equipment and products, including transport and service. Only products presenting a novelty value are eligible for support.

The Act also sets size of support, which could be given to enterprises. For example, support can be granted, amounting to up to 25%, to the project costs of development activities to concretise the results of industrial research in a plan, a project or a design plan relating to new products, production methods or services which have been changed or improved, no matter whether they are intended for sale or use, including generation of a first prototype which cannot be used commercially (precompetitive stage).

Support can be granted covering up to 50% of the costs of projects for industrial research. Where support is granted to small and medium-sized enterprises, the amount granted can be increased by 10%⁸⁵. Support can be granted to undertakings, companies, associations, organizations and public authorities.

Besides, support can be granted in case of projects aiming at product development based on life cycle analysis, environmentally conscious purchasing policy, or environmental management; for knowledge building, technical advice from external consultants, process and product development activities with environmental aspects, staff training and organizational development, knowledge transfer and documentation. Support can only be granted if the beneficiary employs one or several new employees for a period corresponding to a minimum of six man/months to secure the implementation of the project, or that the employees of the beneficiary complete training to secure the implementation of the project. Moreover, the beneficiary must operate or set up adequate environmental management systems. Support can be granted covering up to 50% of the project costs⁸⁶.

Described above measures are not common. They are not really popular as there are big limitations for their use. Particularly, government can not give enterprises financial support unless it will obtain permission from EU. Therefore, this economic stimulation has low scale and is used mainly for research purposes and implementation of new technologies.

⁸⁵ *Consolidated Environmental Protection Act, №698 (1998) Section 54*

⁸⁶ *Consolidated Environmental Protection Act, №698 (1998) Section 54b*

3.4. Environmental industrial legislation in Sweden

Short description of Swedish environmental industrial legislation

Sweden is a country with long history of environmental legislation development. First legal acts, concerning environmental issues, appeared before 1900. The first Environmental Act was adopted in 1969. It was up-to-date act, aiming at environmental protection through the widely spread in those times end-of-pipe technology.

In 1972 Sweden hosted the first UN conference on environmental issues. Several important acts were added and modernised in this period, for example the Nature Conservation Act, the Forestry Act (1979), the Water Rights Act (1983), the Act on Chemical Products (1985), the Environmental Protection Act, the Waste Collection and Disposal Act (1979) and the Public Health Act (1982)⁸⁷.

Gradually, the environmental problems started to raise more and more concern. It became obvious that rectification in source is much more effective way of decreasing of environmental pollution than end-of-pipe solutions⁸⁸. In 1987 the “Brundtland report” was published, introducing the concept of sustainable development. Sustainable development became one of the guiding ideas of the main piece of environmental law in Sweden – the Swedish Environmental Code.

The Swedish Environmental Code was adopted in 1998 and entered into force on 1 January 1999. The purpose of this Code is promotion of sustainable development, assuring a healthy and sound environment for present and future generations.

The Environmental Code shall be applied to ensure that:

- human health and the environment are protected against damage and detriment, whether caused by pollutants or other impacts;
- reuse and recycling, as well as other types of management of materials and energy are encouraged in order to establish and maintain natural cycles⁸⁹.

The Code obliges persons, who pursue an activity or intend to do so, to implement protective measures, comply with restrictions and take any other precautions that are necessary in order to prevent, hinder or combat damage or detriment to human health or the environment, which can result from their activity. It claims the necessity of use of the best possible technology for prevention of damage or detriment to human health or the environment.

Before the adoption of the Environmental Code, Swedish environmental law presented a mixture of private and public law, which was a mosaic of many acts and regulations, not always fitting to each other. The purpose and background of the laws were different and to a large extent the environmental legislation was based on balancing protection and conservation of environment against other social interests⁹⁰. The large number of different rules made their implementation difficult and there was an urgent need for coordination of the laws. The Environmental Code was designed for unifying and compiling existed environmental legislation that should result in better coordination and improvement of Swedish environmental law. The Code includes provisions from 15 former acts. Now the Code contains 33 chapters comprising almost 500 sections. However, it is only the fundamental environmental rules that are included in this document. More detailed provisions are laid down in ordinances made by the Government⁹¹.

⁸⁷ Steneroth Sillen M. (1999) *Environmental Law in Sweden*. In Koeman N. *Environmental Law in Europe*. London: Kluwer Law International p.523

⁸⁸ Steneroth Sillen M. (1999) *Environmental Law in Sweden*. p.524

⁸⁹ *The Swedish Environmental Code*. (1999) Chapter 1

⁹⁰ Steneroth Sillen M. (1999) *Environmental Law in Sweden*. p.524

⁹¹ Steneroth Sillen M. (1999) *Environmental Law in Sweden*. p.526

The Code comprises a number of innovations in comparison with the previous legislation, including:

- General rules of consideration, which are contained in Chapter 2 of the Code. Under these rules everyone must take necessary protective measures and other precautions.
- Environmental quality standards, which determine limits for nature's carrying capacity.
- EIA must always be carried out before permits are granted for environmentally harmful activities.
- The Environmental Code introduces a system of sanctions which include environmental penalties and charges for infringements of its provisions⁹².

The Environmental Code has resulted in numerous amendments being required to other legislation. Furthermore, an extensive review of applicable ordinances has been undertaken and, since the Code is a framework law, a great number of new ordinances have been adopted.

There is some criticism, addressing the Swedish Environmental Code. The total integration has not been achieved. There are still overlapping provisions, loopholes and other drawbacks in the Code. The Code is not always comprehensive enough to give a clear understanding of how it should be interpreted⁹³. The relation between the Environmental Code and other statutes is not always clear as well.

When Sweden became a Member State of the European Union the Government examined all relevant legislation in the light of EC environmental law. The Government is still in the process of implementing EC environmental law⁹⁴.

Licensing

Many types of environmentally hazardous activities require licences, which could be issued by the Environmental Court or a county administrative board or a local government authority. The assessment of permissibility under the Environmental Code will be broader than under the previous legislation as not only emissions from an environmentally hazardous activity but also questions concerning the management of natural resources and the use of chemicals will be considered.⁹⁵

The activities requiring licences are specified in lists, the so-called A, B and C lists of environmentally hazardous activities for which licences or reports are compulsory. The first category, A, comprises establishments or activities deemed to be the most polluting or likely to cause disturbance as mills for production of pulp and paper products, installations for processing mineral deposits, pharmaceutical factories with chemical and biological manufacturing, iron or steel works. The initiators of these activities must apply for licence to the Environmental Court⁹⁶. The second category, B, comprises activities less likely to cause pollution or disturbances to the same extent as category A. Category B activities also require a licence but the licence is to be applied for the County Administrative Board or the municipalities. Finally, there is the third category, C, encompassing activities less likely to cause disturbances. These activities are not required to obtain a licence but must submit reports to the municipality.

Licence is necessary in case of modification of existing activities. This requirement also covers activities, operated before the obligation to obtain a licence came into force. Now, under the new legislation, they are required to get licence.

⁹² The Swedish Ministry of Environment (2001) *Presentation of the Swedish Ministry of the Environment* Available on-line www.miljo.regeringen.se/pressinfo/pdf/M2001.02.pdf [10 October 2002]

⁹³ Nilsson A. (2000) *Environmental Law in Swedish Law in the New Millennium* by Bogdan M. Stockholm: Norstedts Juridik, p. 453.

⁹⁴ Steneroth Sillen M. (1999) *Environmental Law in Sweden*. p.534

⁹⁵ Lundström R.-M. (1999) Practical questions of environmental law in Sweden. In Koeman N. *Environmental Law in Europe*. London: Kluwer Law International, p.538

⁹⁶ Lundström R.-M. (1999) *Practical questions of environmental law in Sweden*. p. 539

The application shall contain:

- the particulars, drawings and technical descriptions necessary for an assessment of the environmentally hazardous activity;
- a description – an environmental impact statement – of the environmental effects, such as the nature, severity and range of disturbances the activity may cause;
- information necessary to assess how the general rules of consideration in Chapter 2 of the Environmental Code are complied with;
- proposals for the protective action or other precautionary measures required to prevent or remedy detrimental effects of the activity; and proposals on how the activity should be inspected⁹⁷.

The licensing court/authority is responsible for carrying out a complete investigation of any case that is subject to the authority's examination. If application is appropriate, the court/authority shall by means of a public announcement give to all interested sides an opportunity to express their views. If the application is examined by the Environmental Court all documents and the public announcement are sent to the National Environmental Protection Board and the Legal Financial and Administrative Services Agency. The public announcement is also sent to affected municipalities, county administrative boards and other public authorities.

A public announcement shall contain information concerning:

- the location of the activity and a brief description of the planned activity as its nature, extent and environmental effects;
- the place where the documents concerning the case are available;
- the period within which statements concerning application shall be submitted.

The licensing authority shall involve interested authorities into discussion of the case. Usually, the licensing authority holds a meeting with participation of the concerned parties. All costs, entailed by licensing procedure, are borne by the applicant.

Normally the following criteria are considered during the permissibility examination procedure:

- Is the location chosen by an applicant acceptable taking into consideration the disturbances which remain after protective measures have been taken?
- Does the activity contravene a detailed plan or area regulations?
- What protective actions and other precautionary measures are necessary in order to prevent or remedy detrimental effects caused by the activity?
- What detrimental effects to the environment remain when the rules on choice of location and the rules on protective and other precautionary measures have been applied?
- Are the detrimental effects of significant importance?
- Is there reason to grant a licence in spite of the fact that an activity is feared to cause substantial detriment?⁹⁸

The licensing authority shall in its decision specify in details the environmentally hazardous activity to which the licence relates and the conditions that apply.

Under the Environmental Code a licence may be granted for a limited period of time. Only on very specific grounds a prohibition may be imposed on the activity and the licence wholly or partially revoked before licence's expiring, for example⁹⁹:

1. when ten years (in some cases, this period can be shorter) have elapsed since the decision granting a permit entered into force;
2. where the activity is responsible to a significant extent for an infringement of an environmental quality standard;
3. if the information was misleading or insufficient;
4. if the terms of the permit that relates to the activity or measure have not been complied with;

⁹⁷ Lundström Rose-Marie. (1999) *Practical questions of environmental law in Sweden*. p. 541

⁹⁸ Lundström Rose-Marie. (1999) *Practical questions of environmental law in Sweden*. p. 544

⁹⁹ *The Swedish Environmental Code*. (1999) Chapter 24

5. if the activity causes any significant damage that was not anticipated when the permit was granted;
6. if the conditions in the surrounding area have changed significantly;
7. if a significant improvement in terms of human health or the environment can be achieved by the use of a new process or treatment technology;
8. if the use of a new technology would significantly improve the control of the activity;
9. if the activity takes place in an area subject to a special prohibition;
10. in order to improve the safety of a structure.
11. if it becomes evident that the conditions attached to the permit are insufficient to mitigate the adverse effects on the natural environment.

Integrated pollution prevention and control

The Swedish Environmental Code is complex and integrative piece of law, which includes almost all aspects of environmental protection and management. It is a legal base, prescribing issuing of complex and unified licence. In this way it complies with EC IPPC directive¹⁰⁰.

Environmental impact assessment

Each application for a licence shall be supported by an environmental impact statement. As EC Directive on EIA is in force, Swedish environmental law is obliged to include provisions of the Directive. EIA is required regardless size of impact. That makes rules of the Environmental Code on EIA stricter than it was in previous legislation. The EIA is regulated by the Chapter 6 of the Code.

The purpose of EIA is to establish and describe the direct and indirect impact of planned activity on people, animals, plants, land, water, air, the climate, the landscape and the cultural environment, on the management of land, water and the physical environment in general, and on other management of materials, raw materials and energy. An environmental impact statement relating to an activity or measure that is likely to have a significant environmental impact shall contain the information, including:

1. a description of the activity or measure with details of its location, design and scope;
2. a description of the planned measures for avoiding, mitigating or remedying adverse effects;
3. the information that is needed to establish and assess the main impact on human health, the environment and management of land, water and other resources that the activity or measure is likely to have;
4. a description of possible alternatives together with a statement of the reasons why a specific alternative was chosen;
5. a non-technical summary of the information specified in points 1-4.

The cost of an environmental impact statement and an environmental impact assessment procedure shall be borne by the person submitting an application¹⁰¹.

Internal environmental control

Both internal and external types of environmental control of enterprises' activity exist in Sweden. The external control of all environmentally hazardous activities is carried out by supervisory authorities. The central supervisory authority is the National Environment Protection Board. However, the internal control of enterprises comprises an essential part of enforcement of the environmental regulations and the licence provisions. Anyone performing an activity for which licence has been granted must submit each year a special environmental report to the supervisory body, describing the actions taken to fulfil the conditions of the licence decision and the result of these actions¹⁰². It is planned to develop systems of internal control and environmental reporting in future. The National Institute of Economic Research, the Swedish statistics and the Swedish EPA are working in this field¹⁰³.

¹⁰⁰ Steneroth Sillen M. (9 October 2002) Personal interview

¹⁰¹ *The Swedish Environmental Code*. (1999) Chapter 6

¹⁰² Lundström Rose-Marie. (1999) *Practical questions of environmental law in Sweden*. p. 546

¹⁰³ Swedish Ministry of Environment (1999) *Sustainable Sweden – a Progress Report on Measures Promoting Ecologically Sustainable Development*. Available on-line:

www.miljo.regeringen.se/propositionermm/skrivelser/pdf/s99-2000_13eng.pdf [10 October 2002]

Environmental management and audit

Sweden does not have any special regulations for environmental audit. The EC Regulation on EMAS is used in the country. However, promotion of environmental audit and management is part of environmental policy of the country. For example, the Swedish National Board for Industrial and Technical Development (NUTEK) has been facilitating environmental management since 1996. Besides, Government tries to integrate environmental and resources management more systematically into its own activities by introducing environmental management systems¹⁰⁴. 99 Governmental agencies are currently in the process of application of environmental management systems.

Taxes and charges

Economic instruments in environmental policy have only recently been generally accepted as viable instruments in Sweden. Though in the 1970s, large subsidies were given to firms and local government to facilitate and spread up environmental protection measures, subsidies play only a minor role today. There are subsidises for development of new technology, subsidises for liming of lakes, and subsidy for the preservation of the cultural landscape.¹⁰⁵

Green taxes comprise significant part of environmental charges in Sweden. Revenues from environmental and environmentally related taxes are quite big and present rather big portion of total tax revenues. The tax on CO₂ was introduced January 1, 1991, at the level of 0.25 SEK/kg of CO₂ released¹⁰⁶. It is levied on oil, coal, natural gas, liquefied petroleum, gas and petrol. There are exceptions for ethanol/methanol/biofuels, peat and waste. The tax varies over fuels. Environmental taxes are constructed as taxes on inputs, because of the difficulty of constructing of pure emission tax.

Liability for environmental offences

The Chapter 29 of Environmental Code determines the order of liability for environmental offences. It mainly prescribes the use of administrative liability, though it envisages possibility of criminal liability as well.

A special charge (environmental sanction charge) shall be paid by any economic operator who in his business activities¹⁰⁷:

1. neglects to comply with rules issued pursuant to this Code;
2. commences an activity for which a permit must be obtained or notification submitted pursuant to this Code if a permit has not been granted or notification has not been submitted; or
3. neglects to comply with the terms of a permit or conditions laid down pursuant to this Code.

Persons who pursue or have pursued an activity or taken a measure that is a contributory cause of the pollution (operators) shall be liable for the after-treatment of areas, buildings and structures. After-treatment liability means that the person who is liable for after-treatment shall, to the extent reasonable, carry out or pay for any after-treatment measures that are necessary in order to prevent or combat subsequent damage or detriment to human health or the environment. When the extent of liability is determined, some factors shall be taken into account as length of time that has elapsed since the pollution occurred, whether the person liable was obliged to prevent future damage or not, any other relevant circumstances. Where an operator can show that he was only responsible for the pollution to a limited extent, this shall also be taken into account in connection with determination of the extent of liability¹⁰⁸.

¹⁰⁴ Swedish Ministry of Environment (1999) *Sustainable Sweden*

¹⁰⁵ Brännlund R. (1997) *Green taxes reforms. Some examples from Sweden. Umeå Economic Studies №446, Umeå University. p.5*

¹⁰⁶ Brännlund R. (1997) *Green taxes reforms. Some examples from Sweden. p.6*

¹⁰⁷ *Swedish Environmental Code* (1999) Chapter 30

¹⁰⁸ *Swedish Environmental Code* (1999) Chapter 10

Environmental damage compensation

The last part of the Code gives detailed instructions on compensation of environmental harm in different cases. It lists sources of environmental damage and prescribes order of compensation in each case. Besides, according to the Code persons who pursue environmentally hazardous activities for which a permit must be obtained shall pay contributions to the insurance as it is specified by the Government or the authority appointed by the Government. Compensation for environmental damage and environmental clean-up is paid out from insurance on terms, determined by the Government or special authorities, for example, if polluter can not pay compensation or is unknown¹⁰⁹.

Mechanisms, supporting cleaner production

As it is stated in Swedish Environmental Code everybody conducting an operation must conserve raw materials and energy and also utilise opportunities of re-use and recycling. In the first instance renewable sources of energy should be utilised; and the eco-cycle principles should be cherished.

The Environmental Code contains only general provisions regarding cleaner production. These provisions were designed as guiding rules for policy-makers, licence-issuing authorities and enterprises. The driving forces behind industry adjustment to ecological sustainability are legislation, fiscal incentives and market forces, such as consumer demand for environmentally sound products and services. The prevailing idea in Sweden is that modern environmental policy is not based solely on legislation, but enterprises themselves take voluntary initiatives in response to market pressure and that it has become increasingly profitable for enterprises to integrate environmental concerns into their operations¹¹⁰.

Stated above does not mean that Swedish authorities rely solely on market path of cleaner production promotion. For example, the Government intends to undertake measures to ensure that an integrated product policy is formulated¹¹¹. The integrated product policy is important for production of goods and services with the smallest possible impact on human health and environment. It is planned to increase coordination of existing and new policy instruments relating to products. The object is to extend producer responsibility to most products and to internalise external costs, resulting from life cycle of the product.

¹⁰⁹ *Swedish Environmental Code (1999) Chapter 33*

¹¹⁰ *Swedish Ministry of Environment (1999) Sustainable Sweden*

¹¹¹ *Swedish Government Communication 1999/2000:114 (2000) A Strategy for an Environmentally Sound Product Policy*

4. Discussion

4.1. Licensing

Licensing exist in all three countries, which have been subject for comparison. But systems are quite different in reviewed countries. While Sweden implemented integrated licence approach for its enterprises, which corresponds to requirements of IPPC directive, Denmark is still on the way to this system. Russian licensing system applies sector approach where different authorities are responsible for issuing of licences and permits for different kinds of activities. The conditions of activity and licence term are determined separately in each case.

However, it seems that integrative approach to licensing system is more advanced and adequate because it better corresponds to nature laws and interrelations between different components of natural systems. For example, if enterprise carries out activity, connected with ground water, it is a subject for licensing at least according to water legislation and the Earth's interior legislation. So, the enterprise must obtain at least two different licences. But from the natural scientist's point of view ground waters and the Earth's interior do not exist separately – they are part of one system. Therefore, issuing of separate licences can lead to overseeing of some important environmental aspects of enterprises' activity.

IPPC directive envisages use of BAT, waste minimisation and efficient resource use. Both Danish and Swedish systems of licensing set the same requirements to enterprises. Russian enterprises can be required to undertake measures for environmental protection, but usually these requirements concern end-of-pipe solutions. So, enterprises are obliged to fulfil environmental standards, but do not need to improve constantly their environmental performance. Though the slight shift towards use of BAT, waste minimisation and efficient resources' use technologies can be observed in the RF Federal Law on Environmental Expertise and the RF Federal Law on Environmental Protection, it does not play big role.

The better cooperation between different environmental authorities and industrial circles are important for developing of integrated approach to environmental licensing in Russia. It can be a long term plan, which is not included into modern environmental policy incentives in Russia. It is hardly possible that Kaliningrad region would be able to introduce this system by itself, because changes in licensing system must be very significant. It will be impossible to introduce them at regional level avoiding contradiction with federal legislation.

4.2. Environmental impact assessment

Existing system of EIA in Russia is relatively young. The RF Federal Law on Environmental Expertise and Instruction on Environmental Basement were introduced in 1995, the Order on Environmental Impact Evaluation was adopted in 2000. These legal acts comprise the modern tendencies in EIA development.

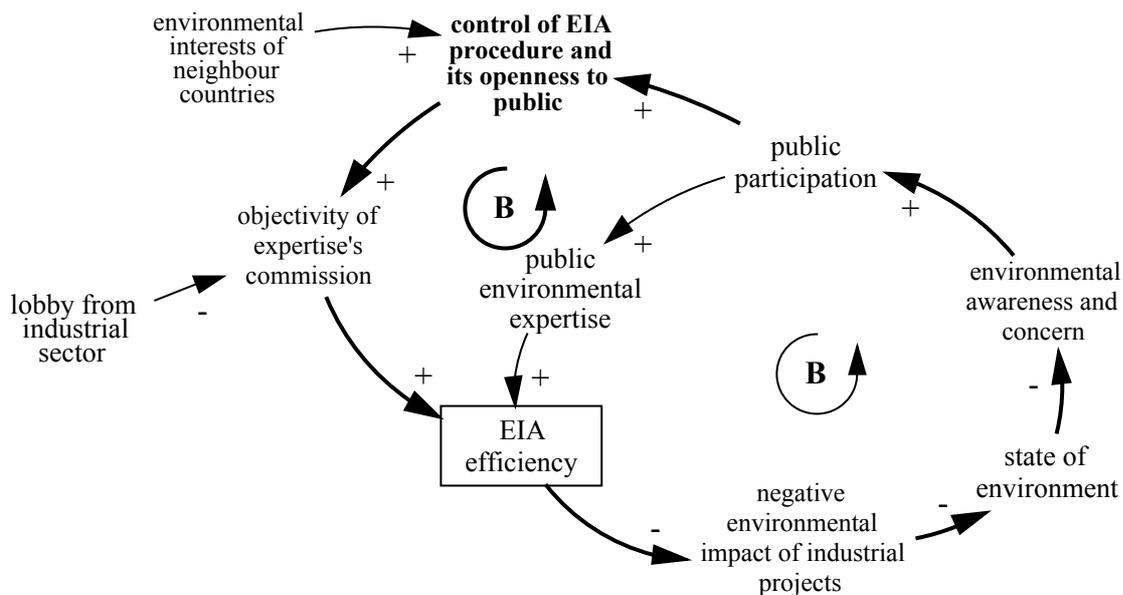
The EIA procedure can be divided into two parts: technical investigation and public discussion. Legislation on the technical part of EIA is very complex and strict in Russia. It contains the same set of requirements as Swedish and Danish legal acts, corresponding to the EC Directive, i.e. the EIA of a project must evaluate the direct and indirect effects of a project on: human beings, flora and fauna; soil, water, air and the landscape; material base and cultural heritage. It also must consider the impact of a project on the interactions between these factors and take into account location of an object.

Russian EIA includes evaluation of the possible alternatives to a project, as the EC Directive does. It is an attempt to use BAT-principle, however discussion of possible alternatives has turned to be not so fruitful in reality. Usually, it is just a formal procedure. The alternatives are not considered as serious substitutes to proposed activity.

EIA must include measures for reduction and prevention of negative impact of the planned activity on environment. Start of new industrial activity is not possible without getting the positive decision of environmental expertise.

Overall, it is possible to say that Russian legal acts on EIA more or less correspond to principles of precaution and prevention as well as they fulfil the requirements, imposed by complexity of ecosystems. However, there is a lot of criticism towards the part of EIA, concerning public participation. Russian NGOs and some other organisations justly accuse authorities and enterprises in lack of objectivity. There have been some situations in the region, when the positive decisions of the environmental expertise have been obtained in very doubtful cases. Besides, public participation and control is restricted by the low availability of information, concerning EIA of projects. Legal acts on EIA claim the openness of information and possibility of public participation, but this mechanism does not work in real life.

The RF Federal Law on Environmental Expertise contains one measure, which could increase public participation and influence decision-making process in environmental protection. This measure is a public environmental expertise. However, use of the mechanism of a public environmental expertise is not very common. There are some obstacles. Public environmental expertise can be carried out only before or at the same time as the state environmental expertise. But quite often public organisations get information, that a project is sent to environmental expertise, when it is being reviewed by an expert commission. In this case it is often too late to do something. Besides, it takes time to find experts and funding for public environmental expertise. Another problem is restricted access to information, even if it must be open to public.



CLD 3. Forces, influencing EIA efficiency in Kaliningrad region

It seems that the main problem with EIA is not insufficiency of legal base, but difficulties with enforcement of this mechanism. In Kaliningrad case the situation could be improved if all authors of the projects, who plan to apply for environmental expertise, would be obliged to send information on projects to the Environmental Council of the Public Chamber of Kaliningrad region. The Public Chamber was based in Kaliningrad region in 2001, aiming at increasing of public participation in the decision-making process in the region. It is a union of NGOs and individual representatives. It comprises several different Councils. If Environmental Council would have better opportunities for external control under the projects, which can have negative impact on environment, it would be able to undertake some measures. Another way is introducing of liability for refuse to provide information as now enterprises are not punished for breaking the rules on information openness.

There are two issues, which must be pointed out. First, the NGO's sector is raising its head in the region. It is very important for decision-making in sphere of environmental protection and in particular in EIA process. Another factor, which can not be ignored, is environmental interests of neighbouring countries. As region is surrounded by foreign States, and Russia signed the Espoo Convention on the Environmental Impact Assessment in a Transboundary Context, it imposes additional requirements to EIA of some projects, which can influence environment of other countries.

4.3. Environmental management and audit

Environmental management and audit are considered to be good means for improvement of environmental performance of an enterprise. Environmental management in Denmark and Sweden is based on EMAS and ISO 14000 certification. The driving forces, which make enterprises to apply for EMAS or ISO 14 000, are mainly market mechanisms.

As it was said earlier, certification on ISO 14 000 is not popular in Russia. There is no any enterprise, possessing ISO 14 000 in Kaliningrad. Enterprises are very reluctant to pass voluntary environmental audit as well. Although there are two auditing organisations in Kaliningrad, which have licences for conducting environmental audit, no one from Kaliningrad enterprises has used it on the voluntary base¹¹².

Such a low activity can be explained by several factors. Historically, industrial sector has used to have a negative perception of all measures, connected to environment and environmental protection. Almost all management staff of enterprises in Kaliningrad region share opinion that dealing with environment issues can only disturb the enterprises' work, evolve extra expenses and impose new problems to enterprise (that was a common opinion of management staff of Kaliningrad enterprises, who were interviewed in 2001). Therefore almost all attempts of environmental authorities to cooperate with enterprises have been close to fail. Another problem is ignorance in some questions¹¹³. Not many people in management staff of enterprises at Kaliningrad really know and understand, what does "environmental management" mean and what benefits it can bring to enterprise.

Besides, there are no real incentives for enterprises to introduce environmental management system. Nowadays neither suppliers no consumers are interested in improvement of environmental performance of an enterprise. Though situation can change in nearest future. Due to special geographical location of the region Kaliningrad enterprises are forced to develop contacts with enterprises from other countries, especially from Germany, Poland and Lithuania. This tendency is becoming stronger. So, with time Kaliningrad enterprises might be forced to undertake environmental audit and introduce the system of environmental management and audit in order to increase their competitiveness.

Another reason, why Kaliningrad enterprises do not want to apply for certificate or even pass the environmental audit is the certification cost, which is rather high.

Therefore the possibility of promotion of environmental audit has been discussed in the region. One of the options is to create a regional legal base for environmental audit in Kaliningrad as there is no corresponding legislation at the federal level, except requirements for licensing of environmental auditors. The new legal act can contain, for example, wider requirements to obligatory audit. The modern federal legislation puts obligation to have environmental audit in a limited number of cases, as, for example, in case of total assessment of sold enterprise or in case of privatisation of state property, when recommendations for improvement of environmental performance of an enterprise are not really important. But it is possible to extend the list of cases when obligatory environmental audit is required at the regional level by regional legal acts. For example, it can include enterprises covered by regional and local environmental programmes, which is especially important for municipal enterprises, or in case of licensing of some types of activity if licence is obtained at regional level.

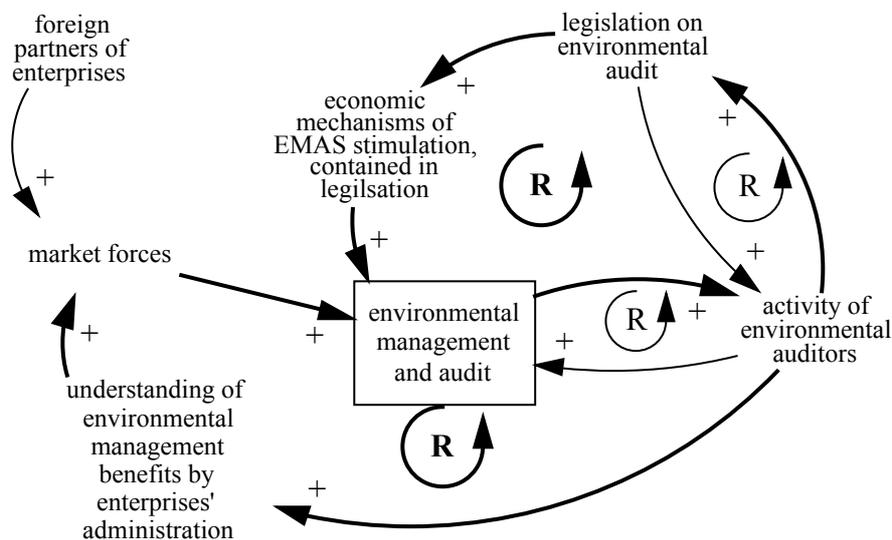
¹¹² Ecoline (2002) *The register of environmental management systems certification*.

¹¹³ *The problem zones in environmental policy of Kaliningrad region* (2001) Kaliningrad: ECOMAN, №3

According to EU, Swedish and Danish legislation the environmental management and audit are based on voluntary agreement of enterprises. But, as there are no market incentives for enterprises in Kaliningrad region to introduce environmental management and audit, it might take very long time until the industrial sector will understand the importance on this system. Setting of some legal requirements in this field can accelerate this process and can become a start point. As obligatory audit can be set only for some cases, the bigger part of enterprises will still be a subject for voluntary audit.

Besides, it is also possible to stimulate willingness of enterprises to introduce environmental management and audit by use of some economic stimulation measures as subsidises, reduced environmental charges, etc.

Another regulation, which should be in the regional provisions on environmental audit, concerns a content and scope of environmental audit. Though the special Order of the RF State Committee on Environment contains targets of environmental audit, they exclude very important issues as system of environmental management at enterprise, company's initiations and attitude towards solution of environmental problems. The eco-auditors in Russia are aimed mainly at control of environmental aspects of industrial activity. They must be re-oriented towards making recommendations for establishment of self-improving environmental management system at an enterprise, which will help an enterprise to develop and improve its own environmental policy. All stated above can be summed up in causal loop diagram below.



CLD 4. Development of environmental management and audit in Kaliningrad region

It must be pointed out that the aim of environmental audit is improvement of both environmental and economic performance of an enterprise due to environmental management system application instead of jeopardising economic interests of an enterprise in order to decrease its negative impact on environment. It is the necessary precondition for environmental audit, viewed as a tool for sustainable development according to the Kaliningrad region Law on Environmental Policy.

4.4. Environmental charges

The environmental charges are the oldest form of economic measures for environmental protection. They are based on polluter pays principle. Russia has quite adequate system of charges, which includes both charges for use of natural resources and environmental pollution below limits and exceeding limits (penalties). Here, the systems of charges are more or less similar for all three considered countries. System of charges in Russia has two distinctive features. It comprises high requirements to the order and extent of nature resources use and levels of environmental pollution, on the one hand, and low size of penalties, on the other hand. Consequently, it has been cheaper and easier for an enterprise to pay fines instead of taking measures

for improvement of environmental performance of an enterprise. As a result, enterprises have earned the reputation of major polluters of environment.

It has become obvious that rational resource management and reduction of environmental pollution require establishment of adequate price on nature services. According to the RF Federal Law on Environmental Protection the regions of RF can develop and adopt norms, standards and other requirements in sphere of environmental protection, which would be stricter than federal requirements. Therefore the Environmental Doctrine of Kaliningrad region contains proposal to change payments for natural resources use, raising them up to adequate level. The same concerns charges for environmental pollution.

4.5. Damage compensation and environmental insurance

Damage compensation is based on the polluter pays principle. Damage compensation is required if harm has been caused to environment or human health. This mechanism is included into environmental legislation of all three countries. The main idea is that polluter must reimburse the total cost of harm, which was imposed by its activity. So, the damage compensation mechanism carries out two functions: restoration of environmental damage (direct effect) and prevention of environmental damage (indirect effect).

Sweden has quite good provisions on environmental damage compensation in its Environmental Code, which imposes an obligation for after-treatment and sets detailed rules for reimbursement of different types of environmental damage. The Code contains guidelines for different cases, when the compensation of damage is required. Besides, it strictly determines who is responsible for environmental damage compensation, which is very important as it is not always possible to find a single offender or sometimes offender can not pay the compensation. Another important part of the system of environmental damage compensation in Sweden is insurance. As all enterprises, having licence on environmentally hazardous activities, must pay insurance fee, it serves as a guarantee of environmental harm reimbursement. Hazardous activities include any activity, which could have negative influence on environment, therefore the list of enterprises, obliged to pay insurance fee, is quite long.

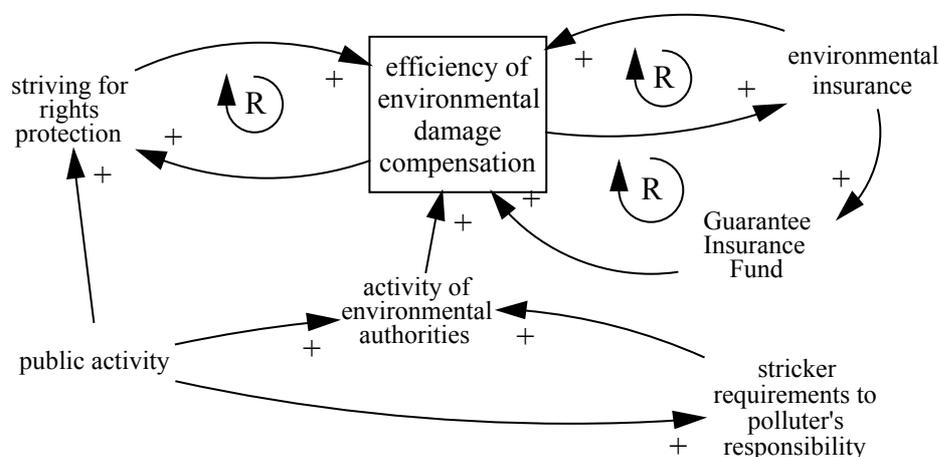
Though the polluter pays principle has been claimed in Russian legislation and mechanism of environmental compensation has been set, it has never been a significant tool of environmental policy. There are several reasons. First, it is insufficiency of legislation itself. Existing ruling acts for environmental damage compensation are not precise enough. Besides, sometimes it is quite difficult to find a person or an organisation, which are responsible for harm reimbursement, especially if the change of owner has occurred, or, for example, the enterprise can not pay compensation due to its bad economy. The second happens rather often, especially with budget or former budget organisations. Budget organisations are the organisations, financed from state, or regional or municipal budget, as, for example, providers of municipal services.

Another problem is poor development of system of appeals. Usually, the state environmental authorities impose suits against enterprises, requiring compensation. But quite often these authorities are not very persistent and prefer to get compromise with enterprises. Therefore the full size of compensation is paid rather seldom.

The low level of citizens' participation should be mentioned as well. Due to some peculiarities of the history of the country the environmental problems started to attract attention of society much later than in many European and North-America countries. Only now people start to realise that they have some environmental rights. However, people quite rare protect them in court. It has also historical routes, as it was not common to defend human rights in court in Soviet times. Now the situation is slightly changing due to activity of NGOs. Both environmental NGOs and NGOs, dealing with democracy and human rights issues, help to protect population's right for healthy environment in court. They deal with claims for compensations of environmental damage as well. NGOs also push authorities to put new legal norms, safeguarding the human rights.

Kaliningrad region can impose its own legal acts regarding environmental damage compensation, which would be stricter and more detailed than federal requirements.

Another important question is environmental insurance. Though there is no special legislation on environmental insurance at the federal level, some regions of Russian Federation adopted their own laws on environmental insurance as Nizhniy Novgorod and Ulyanovsk regions, for example. The restriction is impossibility for region to introduce an obligatory environmental insurance. It is a privilege of federal legislation. The project of the regional Law on Environmental Insurance has been discussed in Kaliningrad since 2000¹¹⁴. The norms of proposed law contain the order of insurance process, rights and responsibilities of enterprises and insuring companies, the list of activities, which are subject for environmental insurance. Besides, according to the proposed law the special Guarantee fund of Environmental Insurance must be established. This fund will compensate the caused damage if offender is unknown or can not make compensation due to bankruptcy, etc. Though the project was suggested two years ago, it has not been approved. It could be caused by lack of incentive to adopt it as there is a tendency to underestimate the importance of environmental damage compensation mechanism. The scheme of improvement of environmental damage compensation mechanism is showed in CLD5.



CLD 5. Possibilities for rising efficiency of environmental damage compensation by toughening of requirements to polluter's responsibility and implementation of environmental insurance.

4.6. Mechanisms, supporting Cleaner Production

Cleaner production is very important mechanism of comprising environmental, economic and social interests without jeopardising any of the components. Therefore its implementation really increases sustainability of industry. But, as it was already discussed in part on environmental management and audit Russian enterprises are not really interested in implementation of cleaner technologies and improvement of environmental management.

The importance of resource-saving and efficient technologies is claimed in the Federal Law on Environmental Protection and some other federal laws, in the Kaliningrad region Law on Environmental Policy and in the State Environmental Doctrine as well. However, no one of these legal acts contains precise recommendations on how to facilitate this approach.

Sweden does not have any legal norms, concerning promotion of cleaner production. It is considered that market forces themselves push enterprises to use this approach. Danish Environmental Protection Act comprises a separate part, titled as "Recycling and Cleaner Production", with special provisions, concerning

¹¹⁴Proekt zakona Kaliningradskoy oblasti "Ob ekologicheskom strahovanii v Kaliningradskoy oblasti" [The project of the Kaliningrad region Law on environmental insurance in Kaliningrad region] in Materials of the 4th Russian Conference on the Theory and Practice of Environmental insurance, Kaliningrad, May 2000, p. 27-47

cleaner production. It contains quite detailed instructions for cases, when state aid can be received by enterprises. It describes the list of measures and activities, when enterprise can apply for aid, and the precise size of aid. The measures of this part are rarely used in Denmark as they can contradict EU requirements. Besides, market forces play a big role in development of cleaner production in Denmark and Sweden. But Kaliningrad authorities could use this chapter as one of the examples, how practical mechanism of cleaner production facilitating can be put into legislation.

One can find a lot of references when Russian legal acts suggest economic stimulation if an enterprise uses resources-saving, waste-reducing technologies. The RF Federal Law on Environmental Protection suggests subsidies, tax credits to enterprises, introducing elements of cleaner production. The Kaliningrad region Law on Environmental Policy claims economic benefits to enterprises, rising resources use efficiency, reduction of waste production, switching to renewable resources, etc. The Kaliningrad Law on Wastes of Production and Consumption proposes to reduce payments on waste disposal, to give favourable credits or to reduce tax for enterprises, which decrease the waste production in industrial process. However, all these useful measures are quite vague and problematic for practical implementation. Therefore they are just nice words on paper.

A detailed and precise legal act should be adopted in order to make these measures work. This new legal act must contain the information about the types of enterprises activities classified as deserving aid. The size and form of aid in different cases should be determined as well. For example, Kaliningrad region can set reduction of some taxes, payments for nature resources use and some other measures. First of all, this document must be suitable for practical use. It is necessary for creating the incentives to develop cleaner production as a whole and environmental management as a part of it.

4.7. Unification of environmental law

The world tendency is that the development of environmental law has been based on piecemeal approach, when different pieces of legislation have been created separately and more or less independently from each other. As a consequence, environmental law became a rather amorphous, fragmented body of statutes, regulations, administrative rules and case law, which reflects different concepts, uses different legislative techniques and is based on different sources of law¹¹⁵. This problem can be observed in Russia as well. It results in difficulties with practical implementation of environmental law, which is too comprehensive. Sometimes, there is a repetition of the same requirements in different laws. Besides, it is not a rare case when some legal norms contradict others. Furthermore, the piecemeal approach does not really fulfil requirements, set by nature of environmental legislation. Natural processes are very complex and interrelated with each other. They are the components of the system and it is doubtful, if protection of separate part of nature would be sufficient for protection of environment as a whole. Sustainable development concept sets need in even more complex approach.

Some attempts for harmonisation and unification of environmental law have been done when the RF Federal Law on Environmental Protection was adopted. This Law deals with complex approach to environmental protection. But it is quite vague and broad document, which can be viewed only as a framework law. The same can be said about the Kaliningrad region Law on Environmental Policy.

Sweden made an attempt to codify its environmental law, when it adopted the Swedish Environmental Code. It is a complex document, containing regulations for many environmental issues. However, it is far from perfection and it does not cover all environmental aspects.

The environmental law codification has some pluses as improvement of compliance, public access to environmental law, environmental awareness, public participation and better environmental protection in the

¹¹⁵ Rehbinder E. (1995) Points of Reference for a Codification of National Environmental Law in *The Codification of Environmental Law* by Bocken H., Ryckbost D. Kluwer Law International. p.157

end¹¹⁶. An ecological development of environmental law through codification using stronger holistic elements could improve the steering capacity of environmental law.

On the other hand, it is really challenging task to put the enormous number of legal acts in one document. There is a high risk that a new framework law will appear instead of one universal and complex legal document.

Industrial sector deals with great variety of environmental issues: location of enterprise, use of nature resources, environmental pollution, wastes, damage compensation, etc. It is a huge batch of legal acts of different levels and different sources. It is almost impossible to comply with all legal requirements, as nobody really knows them. One of the recent examples is contradiction between the Guidelines on environmental charges on environmental pollution and the RF Tax Code, where unexpectedly the existing Tax Code abolishes the Guidelines, leading to decreasing of overall environmental payments, paid by an enterprise. The Guidelines were adopted in 1993, the RF Tax Code was approved in 1998, but contradiction between these two documents was discovered only in 2002, when one enterprise brought the case into the court.

It seems that some day in future the decision-makers in Kaliningrad region will need to harmonise and unify existing legislation in order to make it more efficient and easier to comply with. Besides, it is necessary for getting synergy of federal and regional environmental law.

¹¹⁶ Rehbinder E. (1995) *Points of Reference for a Codification of National Environmental Law*. p. 159

Conclusions

Now Russian environmental law for industrial sector contains more or less the same components as the analogous branch of law in Sweden and Denmark, i.e. environmental licensing, EIA, internal environmental control, charges for nature resources use and environmental pollution, environmental damage compensation mechanism, etc. In spite of it, the system of prevention and reduction of negative industrial impact on environment does not work effectively. To some extent it happens due to insufficiency of environmental industrial law. Therefore some steps on improvement of environmental requirements for enterprises are required.

After analysis of environmental industrial law of Kaliningrad region, Russia, and Sweden and Denmark the following measures can be recommended to Kaliningrad decision-makers for decreasing of negative industrial impact on environment:

- rising of importance and significance of public environmental expertise by introducing special legal requirements to procedure of public environmental expertise;
- approving special legal act on environmental audit, putting accent on development of environmental management;
- rising of charges for natural resources use and environmental pollution up to adequate level;
- adoption of legal act on environmental damage compensation, which would be striker and more detailed than the existing federal document on environmental damage compensation, and development of legal base for environmental insurance;
- development and approving of economic mechanism for cleaner production promotion;
- work on unification of the environmental law, which is in force at Kaliningrad region.

The role of environmental law for prevention and reduction of negative industrial impact on environment in Russia, as whole, and in Kalinigrad region, in particular, is very important. Sweden and Denmark are known for high level of development of market forces, which can impose some environmental requirements for industry. It is profitable for Danish or Swedish enterprise to have better environmental performance. Unfortunately, market forces can not efficiently influence Russian enterprises' managers behaviour in environmental issues. Market economy in the country is very young. One can expect that in future economic mechanisms will play more significant role for building environmental policy of Russian enterprises. But it is not likely to happened in nearest nature. The current state of environment in Kaliningrad region indicates that measures for improvement of environmental protection must be undertaken now. The most immediate and effective way is to impose and enforce striker legal requirements, which can push enterprises to change their activity.

Besides, the proper environmental law can provoke development of economic mechanism for "greening" of industrial sector. But it is very important that the new legal requirements will be developed in cooperation with all interested sides. In particular, the collaboration between decision-makers and industrial sector at Kaliningrad region is necessary, as it was done in Denmark, for example.

This thesis discusses important, but very complicated issues. It covers just the very top of an iceberg, called "environmental law for industrial sector in Kaliningrad region". The further research on this problem is necessary. First, the suggestions, contained in conclusions, need further investigations in order to make them more precise and detailed. Another important issue, which must be investigated, is enforcement of environmental law. Even proper environmental law can fail if the system of its enforcement will be insufficient.

Industry is necessary for supporting human needs. It comprises economic component of sustainable development. But industry must not jeopardise environmental and social interests. Law is one of the mechanisms for balancing of these three components. Therefore, enforcement of proper environmental legislation in Kaliningrad region could become a good base for sustainable development of the territory.

List of references

- Basse E.M. (1999). *Denmark*. In Environmental encyclopaedia of laws. London: Kluwer Law International.
- Classics in Environmental Studies* (1998), edited by Nelissen N., et.al. Utrecht: International Books.
- Commoner B. (1971) The Closing Circle; Nature, Man and Technology in *Classics in Environmental Studies* by Nelissen N., et.al. Utrecht: International Books (1998)
- Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the regions on the sixth environment action programme of 'Environment 2010: Our future, Our choice', Brussels, 24.1.2001 COM (2001) 31 final 2001/0029 (COD)
- Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment. *Official Journal L 175* , 05/07/1985 P. 0040 – 0048
- Council Directive 96/61/EC of 24 September 1996 concerning integrated pollution prevention and control *Official Journal L 257* , 10/10/1996 P. 0026 – 0040
- Danish Consolidated Environmental Protection Act* (1998) №698
- Decision of the RF Government. (1993) *Instruktivno-metodicheskie ukazaniya po vzimaniyu plati za zagryaznenie okruzhayushego sredy* [Guidelines for charges on environmental pollution] № 632
- Ecoline. (2002) *Obschestvennyy registr sertifikatsii sistem ekologicheskogo menedzhmenta* [The public register of environmental management certification] Available on-line: www.14000.ru/register/ [23 October 2002]
- ECOMAN (2002) *Ecologicheskaya doktrina* [Environmental Doctrine] TACIS Project ECOMAN TSR/RN/0003/030
- Environmental Institute of Russian Academy of system researches (2002) *Sistema upravleniya ohranoy okruzhayushego sredy*. [Scheme of environmental management] Available on-line: www.iso14000.ru/iso_i_gost.html [23 October 2002]
- Environmental performance reviews. Denmark*. (1999) OECD, France
- Gillies D.(1999) *A Guide to EC environmental Law*. London: Earthscan Publications Ltd
- Kaliningrad Committee of State Statistics. (2001). *Sotsialno-ekonomicheskoe polozhenie Kaliningradskoy oblasti v 2000 godu*. [Social and economic State of Kaliningrad region in year 2000]. Kaliningrad: KSCS
- Kaliningrad Committee of State Statistics. (2002). *Sotsialno-ekonomicheskoe polozhenie Kaliningradskoy oblasti v 2001 godu*. [Social and economical state of Kaliningrad region in year 2001]. Kaliningradskaja Pravda, 7 February 2002, p.5
- Kaliningrad region Committee on natural resources of the RF Ministry of Natural Resources. (2000). *Sostoyanie okruzhayushego prirodnoy sredy Kaliningradskoy oblasti v2000 godu*. [The state of environment in Kaliningrad region in year 2000]. Kaliningrad: OOO "Spiral"
- Kaliningrad region Law *Ob Ecologicheskoy politike Kaliningradskoy oblasti* [on Environmental Policy of Kaliningrad region] (1999) № 133
- Kaliningrad region Law *Ob ispol'zovanii zemnih neдр dlya dobichi obscherasprostranennih prirodnih resursov i stroitel'stva podzemnih konstruktsiy na territorii Kaliningradskoy oblasti* [on Use of the Earth's interior for Mining of Common Natural Resources and Building of Underground Constructions at the territory of Kaliningrad region] (1996) №57
- Kaliningrad region Law *Ob Othodah proizvodstava i potrebleniya* [on Wastes of Production and Consumption] (1999) №108

- Kaliningrad State Committee of Statistics. (1999). *Jantarnij kraj na poroge XXI veka*. [The Amber region on the threshold of XXI century]. Kaliningrad: KSCS
- Kaliningrad State University. (1997) *Adaptivnoe prirodopol'zovanie* (Ecologo-geographicheskie aspekty). [Adaptive nature management]. Kaliningrad: KSU
- Kiss A., Shelton D. (1997) *Manual of European environmental law*. Cambridge University Press
- Krämer L. E.C. (2000) *Environmental Law*. London: Sweet&Maxwell
- Krasnov E.V., Blazhchishin A.I., Shkizkij V.A. (1999). *Ecologija Kaliningradskoy oblasti*. [The environment of Kaliningrad region]. Kaliningrad: "Jantarnij skaz"
- Larrue C. The Political (Un)feasibility of Environmental Economic Instruments in *Environmental Policy in Search of New Instruments* (1995) by Dente B. Netherlands: Kluwer Academic Publishers. p.39
- Lundström R.-M. (1999) Practical questions of environmental law in Sweden. In Koeman N. *Environmental Law in Europe*. London: Kluwer Law International
- Ministry of Environment and Energy, Danish EPA: Statutory order from the Ministry of Environment and Energy, №975 of December 13,1995, *on the duty of certain listed activities to draw up green accounts*
- Mishan E.J. (1967) The Costs of Economic Growth in *Classics in Environmental Studies* by Nelissen N., et.al. Utrecht: International Books (1998)
- Modak P., Biswas A. (1999) *Conducting environmental impact assessment in developing countries*. New York: The United Nations University Press
- Moe M. (1995) *Environmental Administration in Denmark*. Danish Environmental Protection Agency
- Nilsson A. (2000) Environmental Law in *Swedish Law in the New Millennium* by Bogdan M. Stockholm: Norstedts Juridik
- Order the RF State Committee of Environment. (2000) *Ob ocenke vozdejstviya na okruzhayuschuju sredu hozyastvennoy i inoj dejatelnosti RF* [On Environmental Impact Evaluation of economical and other activities in RF] №372.
- Orkom Corporation (2002) *Plata za zagryaznenie okruzhayuschey sredi*. [Charges for environmental pollution] Available on-line: <http://www.orkom.ru/service/support/nalychet/june2002/sreda/> [30 October 2002]
- Pagh P. (1995) Experiences of and Plans for the Codification of Environmental Law in Denmark. in *The Codification of Environmental Law* by Bocken H. and Ryckbost D.
- Philippov P.S., Bojko T.M. (2001). *Socialno-economicheskie problemi Rossii*. [Social and economic problems of Russia]. St-Petersburg: "Norma"
- Problem of legislation development in existing political context*. (2001) Kaliningrad: ECOMAN №1
- Proekt zakona Kaliningradskoy oblasti "Ob ekologicheskom strahovanii v Kaliningradskoy oblasti"* [The project of the Kaliningrad region Law on environmental insurance in Kaliningrad region] in Materials of the 4th Russian Conference on the Theory and Practice of Environmental insurance, Kaliningrad, May 2000, p. 27-47
- Regulation (EC) No 761/2001 of the European parliament and of the council of 19 March 2001 allowing voluntary participation by organisations in a Community eco-management and audit scheme (EMAS) *Official Journal L 114* , 24/04/2001 P. 0001 – 0029
- Rehbinder E. (1995) Points of Reference for a Codification of National Environmental Law in *The Codification of Environmental Law* by Bocken H. and Ryckbost D.

- RF Federal Law. (1995). *Ob ekologicheskoj ekspertise* [On environmental expertise] №174-FZ
- RF Federal Law. (1998). *Ob othodah proizvodstava i potreblenija*. [On wastes of production and consumption]. №89-FZ
- RF Federal Law. (2002). *Ob ohrane okruzhayschey sredi* [On environmental protection]. №7-FZ
- RF Government Decision (1992) *Ob utverzhdenii poryadka opredeleniya plati i ee predelnoh razmerov za zagryaznenie okruzhayuschej prirodnoj sredi, razmeschenie othodov, drugie vidi vrednogo vozdeystviya*. [On the size of payment for environmental pollution, waste disposal, other types of negative impacts]. №632
- RF Government Decision (1996) *O poryadke provedeniya gosudarstvennoj ekologicheskoy ekspertizi*. [On order of state environmental expertise] №698
- RF Ministry of Environmental Protection and Natural Resources.(1995).*Instrukciya po ekologicheskomu obosnovaniyu hozaystvennoy i inoy deyatelnosti*. [Instruction on environmental basement of economical and other activity]. №539
- RF State Committee of Environment (1998) *Prikaz ob ekologicheskom audirovanii v sisteme Goskomecologii Rossii*. [Order of Environmental Audit in the system of the RF State Committee on Environment] №181
- RF State Committee on Environment. (1997). *Reglament provedeniya ekologicheskoy ekspertizi*. [Regulations on environmental expertise]. №280
- RF Tax Code*, part 1(1998) №146
- Roberts, N., et al. (1983) *Introduction to computer simulation, A system dynamics modeling approach*. System Dynamic Series, Productivity Press, Portland, Oregon
- Rodgers W. (1994) *Environmental Law*. USA: West Publishing CO
- State Standard 17.0.0.04-90. (1990). *Ohrana prodi. Ecologicheskij passport promishlennogo predpriyatija. Osnovnie polozenija*. [Nature protection. Environmental passport of industrial enterprise. The main regulations]
- Steneroth Sillen Marianne (1999) *Environmental Law in Sweden*. In Koeman N. *Environmental Law in Europe*. London: Kluwer Law International
- Swedish Environmental Code*. (1999)
- Swedish Government Communication 1999/2000:114 (2000) *A Strategy for an Environmentally Sound Product Policy*
 Swedish Ministry of Environment (1999) *Sustainable Sweden – a Progress Report on Measures Promoting Ecologically Sustainable Development*. Available on-line:
www.miljo.regeringen.se/propositionermm/skrivelser/pdf/s99-2000_13eng.pdf [10 October 2002]
- Swedish Ministry of Environment (1999) *Sustainable Sweden – a Progress Report on Measures Promoting Ecologically Sustainable Development*. Available on-line:
www.miljo.regeringen.se/propositionermm/skrivelser/pdf/s99-2000_13eng.pdf [10 October 2002]
- Swedish Ministry of Environment (2001) *Presentation of the Swedish Ministry of the Environment* Available on-line
www.miljo.regeringen.se/pressinfo/pdf/M2001.02.pdf [10 October 2002]
- Treaty establishing the European Community. *Official Journal C 340, 10.11.1997*
- United Nations Conference on Environment and Development (1992) *Agenda 21*, Rio de Janeiro