

The Environmental Safety in Relationship to Sustainable Development and Business Practice

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Abstract — The problem of environmental safety can be considered an important tool which supports and ensures sustainable development. The environmental safety is important from more points of view - economic, social, and political. In the Czech Republic there are a number of tools supporting environmental protection, but these tools are also intended to improve the activities of Czech companies. The article presents the results of research on the use of instruments promoting environmental protection in selected small and medium-sized enterprises.

Keywords — Sustainable development, environmental safety, environment, small and medium-sized enterprises.

I. INTRODUCTION SUSTAINABLE DEVELOPMENT AND ITS PILLARS IN THE STRATEGY OF SUSTAINABLE DEVELOPMENT OF THE CZECH REPUBLIC

Social development can be associated with increased human ability to make good use of the environment [10].

“Permanently sustainable development is such development which preserves chances of covering basic necessities of life to current and future generations, while it does not reduce variety of the nature and preserves natural ecosystem functions.” [11]. Development means the increasing of human abilities in well exploiting of his environment. Rational exploiting depends on economical, social and cultural properties [10], [14].

Sustainable development includes three main, independent and mutually supporting areas:

- finance,
- environment (ecology),

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- social responsibility (CSR), which are also included in The Strategy of Sustainable Development of the Czech Republic.

In 2002, the World Summit on Sustainable Development in Johannesburg accentuated the necessity of reaching such development, which would secure balance among the basic three pillars – social, economic and environmental.

The strategy of sustainable development accepted at the summit in Barcelona in March 2002 therefore contains social and economic priorities of the EU formulated in the Lisbon summit (March 2000), but, furthermore, it emphasizes the environmental direction – by which it ensures required balance of individual pillars.

That is reflected even to strategic documents for this area elaborated in the Czech Republic. The Strategy of Sustainable Development of the Czech Republic 2004 includes

- three pillars of sustainable development (economic, social, environmental),
- three other important areas (research, development and education, European and international context, administration of public issues).

The updated Strategy of Sustainable Development from 2007 is divided into 13 strategic areas including area called “Sustainable Development of Municipalities, Regions and Territories”.

Considering sustainable development, the Czech Republic has to fulfil certain international liabilities mainly in global and regional responsibility while respecting interests of the Czech Republic.

The Strategy of Sustainable Development of the Czech Republic is continuously updated with changes related to The Strategy of Sustainable Development of the EU.

II. PROBLEM FORMULATION ENVIRONMENT AND ENVIRONMENTAL SAFETY IN THE CZECH REPUBLIC IN RELATIONSHIP TO SUSTAINABLE DEVELOPMENT

Sustainability is basically declared by the three following goals:

- ensuring and maintaining high and stable level of economic growth and employment rate growth,
- ensuring such social development that respects needs of everyone,
- efficient environmental protection, both efficient and considerable usage of natural resources.

The quantification of the sustainable development is perceived and achieved in different manners [4].

Environment is, according to the Czech Republic Ministry of Environment definition, [6] “a system containing natural, artificial and social elements of material world which are or can be in a constant interaction with the object considered.

It is everything that creates the natural environment for existence of organisms, including human, and it is a presumption of their further development. The elements are basically air, water, minerals, land, organisms, ecosystems and energy.”

Another definition [7] states that environment is “a group of all agents interacting with a living subject and conditions which surround the subject – in other words it is all that a subject directly or indirectly interacts with. A subject can be represented by an organism, population, human or the whole human society. “

Environment can also be defined as a sum of external conditions which influence life, development and survival of organism. [9]

The problem of environmental protection according to Komar [3] includes all areas related to environment and state safety.

The connection of safety and environment emerges in ecology, safety studies and international relations and the term environmental safety is often considered an equivalent of ecological safety.

Among concrete nowadays environmental dangers we can name quick changes of global climate related to the greenhouse effect and thinning ozonosphere, desertification, loss of biodiversity, water pollution and air pollution beyond state boundaries, accidents caused by human and natural disasters [3], [4].

If we sum these pieces of knowledge, we can stem from the definition [2] and define environmental safety as a state when human society and ecologic system mutually interact in constant sustainable manner and mechanisms for crisis management related to environment are set.

III. PROBLEM SOLUTION

The tools used in the area of environmental safety include monitoring and evaluating related legislative, collection and analysis of data, gaining and broadening knowledge about the environment.

Further they include transfer of information meant for reducing environmental crises and disasters, providing technical expertises, fulfilling sustainable development programs and others.

A. Documents supporting environmental safety

In the Czech Republic the problem of environment is treated by several important documents. Selected documents are characterized further in this text.

State Environmental Policy (updated in 2004) - focuses on reaching goals in four elementary areas:

1. protection of nature, countryside and biological variety,
2. sustainable usage of natural resources, material flows and waste disposal,
3. environment and quality of life,
4. protection climate system of the Earth and reduction of long-distance transfer of air pollution.

In this context individual priority goals were designed: reduction of anthropogenic (industrial) impacts and risks, protection of the environment from negative impacts of natural disasters and impacts of crisis situations, protection climate system of the Earth and reduction of long-distance transfer of air pollution.

Evaluation of realization status of Citizen Protection Concept until 2006 with outlook to 2015

– among else it delimitates overall tasks for citizens, business sphere and also for integrated emergency system with the main goal to protect the population. Main areas related to these tasks are: environment; health of inhabitants; demographic development; energetic and raw materials safety; terrorism; organized crime.

Environmental protection is solved within the protection of the population which is defined as “a set of activities and processes of objectively respective authorities and even individual citizens directed to minimization of impacts of extraordinary events to lives and health of citizens, properties and environment“.

Document Citizen Protection Concept until 2013 with outlook to 2020 - addresses basic organizational and technical measures to protect the population and also the problem of planning and solving measures to protection of the population during a crisis event.

An important part of this document is planning and prevention (civil emergency planning, fire safety, citizen health safety, protection of public health and rescuing lives and health, veterinary protection from dangerous diseases of animals and from the transfer of these diseases and others).

B. Tools for realization of the State Environmental Policy

With regard to document State Environmental Policy [6] we can separate the tools of its implementation into following groups:

- strategic tools – successive to the Czech Republic safety strategy, strategic planning and management in regions in compliance with Local Agenda 21 (Local Agenda 21 is a tool for application of sustainable development principles on local and regional level),
- legal tools – laws and bills addressing the problem of environmental safety (for instance Act No. 17/1992 Sb., About Environment, in the valid reading, Act No. 76/2002 Sb., About Integrated Prevention [12]),
- economic tools – result from ecological and tax reforms related also to for instance usage of supports provided from domestic or European sources (for example from the European development funds for programs related to environmental safety),
- research and development – applied for instance within crisis plan of the Ministry of the Environment including environmental safety, within environmental action programs and global EU programs,
- information tools – usable for example in process of increasing awareness of environment, environmental education, training and edification (for instance by creating Unified Information System about Environment),
- institutionary tools – state institutions founded by either the Ministry of Environment (Czech Environmental Supervision, State Fund of Environment of the Czech republic) or even other resorts or state organizational elements,
- tools for participation of the public sector – increasing awareness of the public in the area of the environment, environmental education, training and edification
- and voluntary tools – these are described further in the text.

These tools have also preventive character – preventive tool should be comprehended not only legislative, but also voluntary tools for policy of environmental protection such as EMS system, “Responsible Care” programs or “Safe Factory” in international conditions, but also the system of environmental labelling. Other preventive tools are monitoring and emergency readiness.

C. Voluntary tool for policy of environmental protection

Program “**Responsible Care**” is a voluntary, world-wide accepted and developed initiative of chemical industry focused on support of its sustainable development by obliging increase of safety of its facilities, transport of goods, improving health safety of humans as well as environmental safety.

The program represents a long-term strategy coordinated by the International Council of Chemical Associations (ICCA), in Europe by the European Chemical Industry Council (CEFIC). In the Czech Republic, the Chemical Safety Council was also constituted (in 2009 as a counselling authority to the secretary of environment in issues regarding chemical safety problems), but the program Responsible Care is provided by the Association of Chemical Industry of the Czech Republic.

This year ten more companies have been given a privilege to use the logo of Responsible Care; total of 69 chemical industry businesses have participated so far.

In Table 1, it is obvious that these businesses use even other preventive tools of environmental safety. The data are elaborated according to status by the end of 2008, while unfortunately newer data set is not available yet.

TABLE 1
THE RESPONSIBLE CARE PROGRAMME IN
CZECH COMPANIES

	Number of companies		
	Implemented	In preparation	Total
Responsible Care	42	17	59
EMS	27	1	28
OHSAS	1	1	2
QMS	36	4	40

Source: Own elaboration according to SCHP [9]

Notes to Table 1:

The term EMS – Environmental Management System means such management system which enables any organization to manage besides else all interactions with environment and to constantly improve their environmental profile.

The Occupational Health and Safety Assessment System embedded in the Czech Republic within norm OHSAS 18001 represents international standard referring to the system of management of work safety and protection of workers' health which enables organizations to manager their risks and constantly improve these areas.

The Quality Management System is defined as a group of approaches, processes and procedures

required for planning and execution in areas of main activities of the organization.

Program “**Safe Factory**” is enounced by the Ministry of Labour of the Czech Republic and the State Office of Labour Inspection. It allows entrepreneurs to introduce systems of safety management and health protection during work (OHS), obtaining certificate and improving safety, productivity and competitiveness. Goal of this program is to increase the level of safety and health protection including environmental protection of legal bodies and entrepreneurs. The program has been enounced since 1996 and companies can use the certificate “Safe Factory” for 3 years. Currently the most acknowledged document in area of OHS is in Europe OHSAS 18001 and handbook ILO-OSH 2001. Program “Safe Factory” results from these documents. The program also results from principles and fundamentals applied by system norms ISO 14001 and ISO 9001.

In order to include companies to the program “Safe Factory” the State Office of Labour Inspection had determined basic requirements which clarify the conditions of participation in this system.

The most fundamental criteria are:

- applicants are big and middle-sized businesses with a minimum of 100 employees,
- companies with activities representing increased life or health hazard to employees, eventually even endangering the environment,
- the program is not meant for such organizations whose activities pose only a minor thread, for instance draftsmen or counselling companies, shops, office style organizations, schools and others.

There are total of 53 companies filed in the program.

Environmental labelling represents labelling of ecologically considerable products and it is based on the same principle as the Czech label "Environmental friendly product". That means voluntary activity of producers who themselves ask for being labelled. If they fulfil all the criteria and gain the right to use the label, there are a number of legal obligations resulting from the fact that directives for trademarks apply on this label (in the Czech Republic the Law about Trademarks).

Nowadays the label can be obtained for the following products: toilet paper, paint and diluents, shampoos, deodorants, insulating materials, bond paper, hair dyes, electric lights, shoes, washing-up machines, wash boxes and cleansing articles.

This system does not include food, beverages and pharmaceuticals. Ecologically considerable criteria are set for 22 groups of products and 2 categories of services. In the Czech Republic 18 valid licences to use the EU eco-label were granted.

National program of product labelling "**Environment friendly product**" is implemented based on the Act of Czech Republic Government No. 159 since 1994 as the National Programme of Product Labelling by trademark "Environmentally friendly product". Its concept should correspond to the unified system of labelling environment friendly products based on regulation EEC 880/92. That presumes mutual acknowledgement of national systems within the EU.

License for the trademark “Environment friendly product” is time limited (two years in compliance with validity of the directive). That does not mean that the product is completely harmless to environment, but it proves that the environment is negatively influenced much less during the product life cycle than it would have been by products with comparable usability characteristics corresponding to limits determined by legal acts and technical norms in the Czech Republic.

Technical directives were set for 56 groups of products and 5 categories of services.

TABLE 2

TRENDS IN THE INCREASE OF PRODUCTS AND SERVICES WITH THE ENVIRONMENT FRIENDLY PRODUCT ECOLABEL, 2004–2008

	2004	2005	2006	2007	2008
Growth in products licensed to use eco-labels	174	189	193	197	205
Growth in production categories with established criteria for product and services evaluation	39	47	50	53	61
Growth in nr. holders of eco-labels, firms, producers, importers	72	81	84	89	92

Source: [1]

Cleaner production is a tool of preventive environmental protection which evaluates the impacts of human activities on the environment as a whole.

It focuses on prevention – reducing volume and toxicity of all states of matter directly by the source and eliminates transfer of pollution from one part of the environment to another.

The principle is following: based on verification of material energetic flows of system monitored (for example production process) causes of negative impacts of this system (production process) on environment are determined.

In the next phase we seek for options how to resolve these causes and suggested alternatives are then evaluated with regard to technical feasibility and with regard to economic and ecological effect. The most suitable alternative is then implemented.

Development of the number of entrepreneur subjects in this area is illustrated in Table 3.

TABLE 3

TRENDS IN THE NUMBER OF ENTERPRISES WITH EMAS REGISTRATION, ISO 14 001 CERTIFICATION AND THE CLEANER PRODUCTION PROJECTS, 2004–2008

	2004	2005	2006	2007	2008
EMAS	16	14	26	28	32
Cleaner Product.	118	124	130	134	141

Source: [1]

D. The tools for policy of environmental protection in selected companies

Small and medium-sized enterprises are considered to be a source of economic growth and job creator, but also face many challenges associated with their specificity as well as the economic situation of the country in which it operates. In the Czech Republic the numbers of such enterprises in terms of the number of people possibly the highest of all EU Member States.

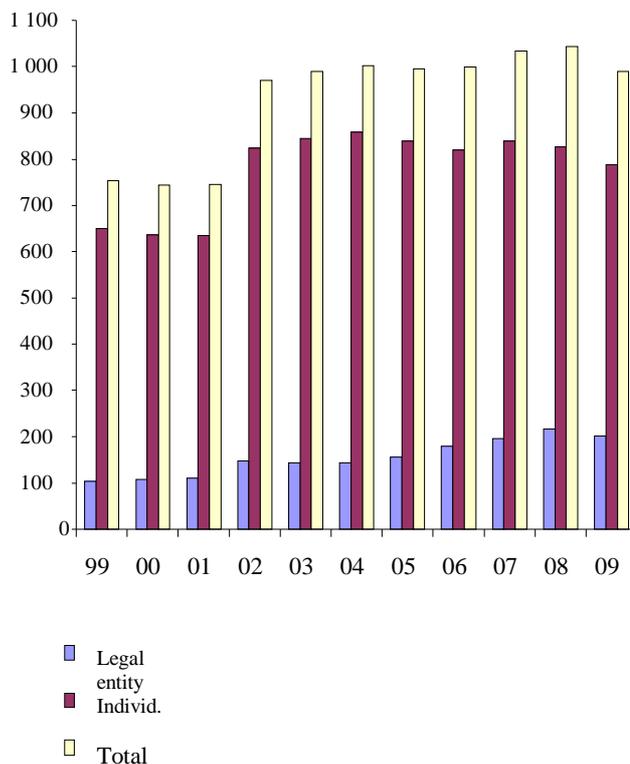
Small and medium enterprises are a very important group of businesses in the Czech Republic, which accounts for more than 50% of exports and imports and generates more than 30% of gross domestic product. At the same time, however, these firms are most sensitive to changes in the business environment, which is positive on one side, but on the other side of risk.

Number of small and medium-sized enterprises in the Czech Republic was 989,568 in the year 2009, and accounted for 62.33% of total employment, and 36.22% of GDP. It was about 201,269 legal entities employing 0-249 employees and 788,299 individuals with 0-249 employees. Share of SMEs in total

enterprises in the Republic amounted to 99.83% at that date. Share of SMEs in total exports in 2009 reached 50.7% of the total imports of the SME share 57.4% [15].

Figure 1 shows the evolution of the number of active SMEs (in thousands) in the years 1999-2009 in the Czech Republic.

FIGURE 1 SMEs IN THE CZECH REPUBLIC –



1999 – 2009
 Source: [15]

The following results were discovered as the part in the framework of questioning small and medium entrepreneurs supporting the quality of the environment in the proximity of Pardubice.

(The group was made up of 24 companies and our research will continue.)

Do you know the instruments of the national environmental policy?

Yes - 45%,
 Partially - 26%,
 No - 29%

Individual instruments were presented to respondents and were followed by another question for everyone.

How do instruments of state policy environment have affect on your business?

Please rank in order of importance:

- 1 - high importance (essential),
- 2 - importance,
- 3 - moderate influence, 4 - few important,
- 5 - irrelevant, no effect.

Table 4 presents the results.

TABLE 4
TOOLS FOR POLICY OF ENVIRONMENTAL PROTECTION IN SELECTED COMPANIES

	Arithmetic mean	Median
Strategic tools	3,208333	3
Legal tools	2,291667	2
Economic tools	2,458333	2
Research and development	4	4
Information tools	3,416667	3
Institutionary tools	2,625	3
Tools for participation of the public sector	4,125	4
Voluntary tools	3,583333	4

Source: own research

(The group was made up of 24 companies and our research will continue.) The research showed that all companies use some tools, and that economic and legal instruments are important for these companies.

E. The problems of small and medium-sized enterprises in the Czech Republic affecting access to the environment - results of a survey

External conditions of SMEs in the Czech Republic were influenced economic crisis, which it subsequently resulted in an economic recession.

Respondents from among managers evaluated the aspects affecting business and their significance was considered by scoring scale from 1 to 5 (5 = most important, fundamentally influencing factor). The same importance could be assigned for more factors.

Tables 5 and 6 included six most outstanding characteristics; their importance is evaluated by the median.

TABLE 5

THE STRENGTHS AND WEAKNESSES OF SMEs

Strengths of SMEs	Evaluation	Weaknesses of SMEs	Evaluation
Flexible organizational structure	4	Lack of capital	5
The rate of utilization of human resources	4	Small market share	4
Quality of information transfer and sharing of business objectives	4	Problems of access to foreign sources	4
The ability to quickly change the product (especially in services)	3	Aging technologies and equipment	4
Loyalty of staff (including specialists)	3	Shortcomings in planning	3
A small number of administrative staff	3	Administrative burden	3
Know-how	3	Lack of in-house development and know-how	3

Source: own research

Increase in capital for small and medium enterprises are limited by hard conditions due to the acquisition of foreign sources (there were increased vigilance of banks, and tightened the conditions for granting credits and loans).

Limited financial resources hinder the access of SMEs to new markets and new technologies, their technologies and equipment obsolete. Enterprises are faced with competition in the market; they are occupied by only a small market share.

On the other hand, SMEs are much more flexible in responding to external and internal changes - organizational structure is flexible, changing the product is linked to fewer production facilities (in the case of services, the situation is even more favourable), communication between workers and managers is more open and more frequent, and therefore workers are much more loyal to their employers.

Know-how represents a specific category - is also the strengths and weaknesses (for different companies).

TABLE 6

OPPORTUNITIES AND THREATS FOR SMEs			
Opportunities	Evaluation	Threats	Evaluation
Diversification of the product to market needs (with emphasis on speed changes)	5	Non-availability of new production technologies due to financial constraints	4
Acquiring new customers (due to good communication and individual access)	4	Legislation for the business sector and changes in the tax system	4
The use of outsourcing for administrative and other activities	4	The sales decline	4
Development of services in relation to the product	4	Negative cash-flow development	4
Better use of IT in the supply and sale of products	3	Growth in energy costs and raw material resources	4
Increasing productivity motivation (personal access to people)	3	Loss of key staff	3

Source: own research

Opportunities and threats - as expressed by the experience of managers - reflects both the strengths and weaknesses of monitoring companies, both external conditions - in particular the uncertainty of expected legislative changes or concerns about financial market developments.

The political changes will reflect, inter alia, in the budgetary austerity measures.

Management of SMEs needs more cooperation, but usually it is very important to determinate the form of such cooperation [16].

IV. CONCLUSION

The environmental safety can be evaluated either in narrower conception within population safety or in wider conception.

In the narrower conception it is related to activities and processes of objectively respective authorities, other subjects and even individual citizens leading to minimization of impacts of extraordinary events to lives and health of citizens, properties and environment.

In wider conception, the environmental safety is secured by strategic, legal, economic, information and institutionary tools including research and development.

There are also tools to involve the public and last, but not least, there are voluntary tools. Voluntary tools of environmental protection policy can be considered preventive. It is for instance EMS system, "Responsible Care" programs or in national conditions "Safe Factory", but also system of environmental labelling; in the Czech conditions labeling of ecologically considerate products is related to the label "Environment friendly product".

Cleaner production is also a tool of preventive protection of the environment.

Preventive tools include also monitoring and emergency readiness.

It is a positive fact that preventive tools mentioned above tend to be used more often in the Czech Republic which reflects the awareness of managers about the necessity of environmental protection and about their responsibility in this area.

Economic and legal instruments of environmental safety can be described as the most used.

The reasons why small and medium-sized enterprises in the Czech Republic do not use all the tools support for environmental policies, resulting particularly from the economic situation of these enterprises. Management monitors mainly financial and asset structure. Environmental aspects are monitored only secondarily.

Management of companies considers lack of capital as a fundamental problem, which translates into problems with cash flow. This deficiency SMEs usually try to balance their flexibility in the market.

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