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2

Environmental Waste Management in Construction Industry

Dr. Davorin Kralj[1,2]
[1]*ART-K, BusinessConsulting, Na gricu 47, 2000 Maribor*
[2]*Institut for Business Excellence, Novi trg 5, 7000 Novo mesto*
Slovenia

1. Introduction

The successful development and implementation of system thinking and processes innovation in an organizational system can produce a significant saving in the amount of business and environment resources and therefore a smaller environmental impact. It is not just about environment resource consumption, production units, but also about the improvement of economical efficiency and thereby the increased competitive capacity of organizational systems. At the same time, the aim is to reduce harmful substances into the environment, the enhancement of relations between organizational systems and social responsibility and thereby the associated standing in the wider social environment (Mulej, 2004). For this reason the care for processes innovation, the change of relation to the environment also the consequence of knowledge about the meaning of co dependence and creative collaboration to achieve the safe, environment friendly operation. Sustainable development is so the consequence of innovation's administration and processes in sense of consideration of dialectic system of viewpoint (Kralj, Krope, Goricanec, 2005).

2. The chosen problem and viewpoint of treating

The production cycle has been permanently shortening; prices, dates and certainly the products quality are more and more under big pressure. The task of management is directed to the change of organizational structure, processes, culture, to compete equivalently with the concurrence on the purchaser's market. The qualities of standards, known by name of ISO 14000, dictate the new measurements in the operation of organizational systems. But the confederation of certificate ISO 14000 do not finish activities on the domain of environment treating, but it is only the further stimulation for the activities on the way to the whole master of quality. The activities are not orientated only to technical-technological problems or just to participants as creators of treating with environment, but to the whole proceeding. In a world where markets, products, technologies, competitors, regulations and even societies change rapidly, continuous innovation and have become important sources of sustainable competitive advantage.
Because of co dependence is the management quality and treating with the environment directed to the quality of administration and leading, because the quality is the essence of organizational culture of creating collaboration. It is about more points of view and inter

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structural treating of mastery of administration, that results from co dependence of different systems of quality (not only technological treating) and that's why the whole measurement of management.
The permanently change of demands to changing the enterprise's practice, that is a consequence of the market competition, it dictates to the management the stimulation of the internal enterprise and the whole solving of problems. It is possible to conserve the preserve advantage especially with the entireness between the planning, administration, supervision and comprehension of content of entrepreneur's activity. The totality of treating of the quality mastery is so a challenge to the entrepreneur's management and the possibility for the reputation strengthening of management. The domain of the ecology is a very sensitive domain of the whole treating. The environment protection is consequently the result of non-systematic, non-entirely and non- inter-disciplinaire, non- qualitative measurement to the planning and defining, that means in the content of administration. For this reason the care for environment, the change of relation to the environment also the consequence of knowledge about the meaning of co dependence and creative collaboration to achieve the safe, environment friendly operation. The responsible holder of dialectic, between different points of view, entire measurement are the administration workers of business systems that is management. The experience of past was too much orientated only to the intensity of qualitative, specialized production, without consideration of influences on the environment and this does not enable the conditions for the ecological innovation. Only the whole, inter-structural and different point of view operation of organizational system enables the treating of ecology and permanent development as an important component of all essential viewpoints in the administration. The permanent development is so the consequence of innovation's administration in sense of consideration of dialectic system of viewpoint.

3. European Union Environmental Policy

European Union Environmental Policy followed these steps:

Date	Key Developments
1967	Council of Ministers adopts Directive 67/548/EEC on dangerous substances
1972	EC Heads of State and Government adopt formal environmental policy at a Paris Summit meeting, following Stockholm UN Environmental Conference
1972-1987	Despite lack of provision for EC environmental action in EC Treaty, more than 100 legal instruments are adopted.
1972-1976	First Community Environmental Action Programme addresses prevention and "polluter pays" principles as well as EIA and co-ordination of national policies.
1977-1981	Second Community Environmental Action Programme with heavy focus on waste issues.
1982-1986	Third Community Environmental Action Programme. Emphasis on integration of environmental issues into other areas e.a. transport, energy and agriculture.
1987	Single European Act (SEA) amends the EC Treaty and states the objective of achieving a "single market" by 1992. SEA explicitly mandates EC environmental action and the need to reconcile trade and environment. SEA also establishes "subsidiarity principle" i.e. actions should take place at the lowest regulatory level.

Date	Key Developments
1987-1992	Fourth Community Environmental Action Programme with focus on air pollution, water quality, chemicals and nuclear safety.
1990	Maastricht Treaty on European Union adopted . EC changed to EU and Community authority in environmental policymaking is further expanded. Member States may be granted temporary derogations from EC environmental rules and/or financial assistance in implementing them.
1991-2000	Fifth Community Environmental Action Programme adopted "Towards Sustainability". Close similarities to Agenda 21 developed at the 1992 Earth Summit. Focus on integrating environment into other policy areas, e.a. industry, energy, transport, agriculture and tourism. Actions target all environmental media (air, water, waste). Economic and fiscal instruments also proposed.
1993	European Environmental Agency (EEA) established.
1997	Treaty of Amsterdam – amends Maastricht Treaty and the Founding Treaties. Further expands environmental protection and sustainable development components.
2000-2001	Sixth Community Environmental Action Programme under development.

Table 1. EC Environmental Policy (PriceWaterhouseCoopers, 2001)

Organizational objectives, policies, and plans are not mutually exclusive components of the management process. They are highly interdependent and inseparable. One cannot effectively pursue objectives without first knowing what they are and what policy guidelines must be followed. The importance of clear and sound objectives cannot be overstated. As the old saying goes, " If you don't know where you're going, any road will get you there'.

4. Management and ethics

Ethics are principles of conduct used to govern the decision making and behaviour of an individual or group of individuals. Because management is concerned with making decisions within an organization, the ethics of the individual or group of individuals making these decisions have significant implications for the organization's stakeholders, its employees, customers, shareholders, suppliers, government, and the public at large.
Special are ethics principles important in environmental management system. Organizations of all kinds are increasingly concerned with achieving and demonstrating sound environmental performance by controlling the impacts of their activities, products and services on the environment, consistent with their environmental policy and objectives.. They do so in the context of increasingly stringent legislation, the development of economic policies and other measures that foster environmental protection, and increased concern expressed by interested parties about environmental matters and sustainable development. Ethics principles covering environmental management are intended to provide organizations with the elements of the following philosophical approaches: justice, individual rights and utilitarianism. The principle of justice involves making decisions based on truth, a lack of bias, and consistency. The principle of individual rights involves making decisions based on protecting human dignity. Finally, the principle of utilitarianism

involves making decisions directed toward promoting the greatest good for the greatest number of people (Mulej, 2004).
The role of ethics in management decisions is difficult, partly because it is such an emotionally charged issue and partly because of the many and varied ethical problems faced by mangers.

5. Organizational culture represents an ideology of the organization

Organizational culture represents an ideology of the organization as well as the forms of its manifestation. The ideology of the organization includes beliefs, values and norms. It is manifested through symbols, language, narration and other activities. Organizational culture is the set of shared philosophies, assumptions, values, expectations, attitudes and norms which bind an organization together. It helps a company to implement its strategies effectively (ISO 1401:2004(E), 2004). Organizational culture has been defined as patterns of shared values and beliefs over time which produces behavioral norms that are adopted in solving problems (IWA 1:2005 (E), 2005). Schein (Shein) has also noted that organizational culture is a body of solutions to problems which have worked consistently and are therefore taught to new members as the correct way to perceive, think about, and feel in relation to those problems. Cultures basically spring from three sources, (1) the beliefs, values, and assumptions on founders of organization; (2) the learning experiances of group members as their organization evolves; and (3) new beliefs, values, and assumptions brought in by new members and leaders (ISO 9001:2004(E), 2004). In fact, these shared philosophies, assumptions, values, expectations, attitudes, and norms bind an organization together. Organizational culture can therefore be used as a form of control (Wilkins & Ouchi, 1983) and as a means of increasing productivity (Denison & Mishra, 1995).In sum, organizational culture is glue that welds managers together for effective implementation of organizational strategies, and the absence of this glue would bring about disastrous effects on the organization.
A knowledge-era organization needs to cultivate opposing traits and embrace dualities. The effectiveness of organization learning depends on how knowledge management processes are aligned with an organization's infrastructure and processes, in a manner that supports the achievement of an organization's goals. That knowledge is of fundamental importance for organizations of any sized industry is no longer a question. Even if knowledge is not the sole element for an organization's survival, it is the most important one because it supports all others.

6. Modern trends requiring systems thinking

There are several trends in world-wide life requiring systems thinking, such as:

- United Nations are the widest organization of humankind and exist to work for holism in detecting and solving of the world-wide problems;
- Many other international organizations exist for the same basic reason;
- Sustainable Development is an important concept, which humankind has launched through United Nations and several other international organizations in order to solve the problem of survival of humankind: we all need interdependence of both our care for economic development and for nature, because both of them together, in synergy rather than in separation, support our survival;

- Since the times of enlightment several centuries ago, humankind has been working for its economic development, including its development knowledge, including science and its application; this development resulted in enormous amounts of new findings, discoveries, and innovations, as well as in a more and more narrow specialization;
- The unavoidable specialization has become exaggerated: along with deep and crucial insights it has caused many oversights, resulting in small and huge problems, all way to world wars, many other wars, profit (as motive) killing profit (as outcome) by causing huge medical, reparation, nature renewal, etc. costs; all these trends required and require increasingly the international bodies and actions mentioned above under the motto: Think globally, act locally ("Glocalization");
- Science and its application resulted, among other effects, in humankind's capacity to master more and more complex, not only complicated, issues, all the way to the most modern computer-supported tools (1) able to bring data, messages, even information from other planets that are many million kilometers away from Earth, (2) able to enter human body, (3) cure diseasies as never before, etc.
- Etc. Most of the amaising results of modern times result from combinations of
  - Deep, and hence one-sided, specialization, and
  - Bridges for co-operation between mutually different and interdependent specialists, based on application of (informal or formal) systems thinking.
- Systems thinking, rather than systems theory, is a millennia old practice of the successful practitioners and scientists and artists, which has made and makes them different from the less successful ones. (All losers are more or less one-sided thinkers and actors.)
- The exaggerated specialization of the modern times caused the need for systems thinking to receive support from systems theory. It can teach humans to live consciously in the way that has always made a part of humans successful without possessing a theory as their background of their success.

(For details see: Dyck et al, 1998; Mulej et al., 2000; Mulej, 2004; Rebernik et al, 2004; etc) (Mulej, 2004).

In the 19th century, there were authors claiming the humankinds' need to consider relations, interdependences, not parts of the world as independent entities only. Their background may have been consciously or subconsciously the ancient Chinese notion of interdependence called yin and yang, and/or the ancient Greek notion of interdependence called dialectics. Both mean interdependence. In the 19th century one has seen Idealistic Dialectics, Materialistic Dialectics, and several more notions and teachings about holistic thinking (Mulej, 2004).

Humankind's knowledge has been growing tremendously, and has been causing an increasingly narrow specialization into single parts of knowledge, with very rare and poorly developed habits of interdisciplinary co-operation;

7. Innovation of administration - the stimulation of ecological innovations

The production concept under the influence of quick and unceasing changing environment adapt to the selection of consumer's needs and wishes and first of all to response to those claims, that are supported with purchasing power. In order to explain this viewpoint, shall develop a systemic model of individual human beings, showing how our co-evolution with our environment is linked to our thoughts, emotions and actions (Pregrad, Musil, 2001). In

the coming years the relationship to the environment will be the key component of competitive ability. The informed individual will influence on the professional dynamics in collaboration with others that will claim the strategic reflection and acting. Because of mutual co independence, cognition of creative collaboration's urgency between all in the process of protection included subjects, above all responsible administration holders, the claim for the change of leading style will be of priority nature. The role of leadership is so directed to the change of starting points of professional philosophy.

One point of view of administrative measurement is substituted with many points of view, inter structural creative collaboration. The environment protection and permanent development is a complex process, where the earlier events have more influence than the later one. From here it originates the sense of activity planning of these, who administrate, who define the aims, who organize and so on. The inadvertence of independence between the parts of totality, that's why also synergic characteristics of the totality, which parts do not have as an individual part, it leads to simplification, that has in case of environment protection the catastrophic experience. Experience show that the environment protection and permanent development as a part of entrepreneur's philosophy is not carried into effect enough; this is so because of administrative workers, who were used to make decisions independently without collaboration of other experts. Without participation of everybody in the chain sequence and from here resulting co dependence it is not possible to expect the good results. The partial solution gives the partial results. The law about the hierarchy sequence and co dependence brings the cognition that it happens more or less all in life in nature and in creating in processes, in which the earlier events have more influence than later one. Consecutive (direct and indirect) influences of parallel events, but they interweave because they more or less depend on one from another (= coindependent) (Mulej, 1992). The starting point of environment protection is in the hands of changing of directed management. Change, innovation, administration are the basic starting point, because such innovation becomes a composed part of the professional politics and the way of operation. The relationship between management and innovation is the element of strategic direction of professional system. The business system is not isolated from the environment, but it is co indedently interweaved with other business systems, that's why the environment protection and permanent development are also results of social environment. The systemic reflex ion with the administration is necessary (Mulej, 1992). System/whole way of reflex ion

- Co dependence, relationships, connection, openness, dialectic system of view points,
- Complication of kind complexity (and kind complication,
- Attractors (attracted, influential powers),
- Emergence, originating of new characteristics of totality, which parts alone do not have,
- Synergy, system, synthesis, new totality with new characteristics
- Totality, entireness, a big picture inclusively with details, characteristics of parts and connections and their consequences,
- Networks, mutual influences main subject of reflex ion.

No system/old way of reflexion:

- Independence, dependence, unconnection, closure, only one point of view,
- Simplicity or complication of complication alone,
- Isolation without attracted, influential powers,
- New characteristics, which would be consequences of relationships between parts in a totality, do not come into existence.
- Parts and partial characteristics as the only one, analyses without synthesis,
- Mutual influences outside attention of reflexion (Mulej, 1992).

Innovation is necessary on all domains and everybody is included in innovation. The role of management is shown in creativeness for the support of collaborators' creativeness. The administrative innovation is so a segment in the innovative business system. From collection of the individual knowledge it comes to the system that is based on interstructural creativeness co dependent on collaboration of different branches. The administrative innovation is a result of team - projected work, supported with continual education of all collaborators in the company, from the basic to the highest hierarchic level and with continual changes in the sense of improvements. The supported leading stimulates collaborators to the responsible behaviour and so it influences on the business system as well as on ecological system. In the example of environment protection it is necessary that we are as much collaborative, creative and target directed as possible. The aims follow the basic and operative:

- The permanent preservation of vitality of nature, biological variety and autochthonism of biotic sorts, their habitats and ecological balance,
- Preservation of variety and quality of natural goods, natural genetic fund and preservation of ground fertility,
- Preservation and renovation of variety of this culture and aesthetic value of region and natural valuable nesses,
- Decreasing of natural sources use, substances and energy,
- Gradual transition to the use of renovated natural sources,
- Prevention of danger and decreasing of charges on the environment,
- Abolition of environment harm and repeatedly
- Restoration of regenerated abilities.

To the purpose of environment preserving development, the aims of environment protection are also:

- Changes in production and samples of use, that contribute to the minimization of natural sources use and creativeness of waste,
- Development and use of such technologies, that decrease and suppress environment charges,
- Use of harmless and decomposed chemicals and substances that have not been accumulated in alive organisms.

The dynamic creativeness of administration is important with the realization:

- Dynamic creativity management has its field of application as an approach for handling complex problems, i.e. as a supporting tool in the process of attain sustainability.
- The whole process of creative problem solving -logical-analytical procedures based on convergent thinking as well as creative intuitive procedures based on divergent thinking.

The whole process of creative problem solving is a complex system in itself, dynamically changing over time, with permanently interacting system elements, it requires a systems thinking perspective in order to be understood and applied (Mulej, 1992).

8. Care for company- care for environment

The pressures of high technical market economy direct the business systems to the continual change and adaptation of quality level of operation to the level of consumer's profit. The inquiry for new products requires the improvement of administration measurement, to give up obsolete technologic products, procedures, personal and organizational culture, and so on. It is about two basic facts about the new period:

1. Things have been changing faster every day.
2. People are more and more different one from another.

Characteristic for these most developed is the effectiveness and successfulness, that basis on the price, quality, uniqueness and choice of tendered. It is about the enforcement with the knowledge, creativeness, culture, where in its broadest meaning belongs also the permanent development and environment protection. In the near future the professional systems will be estimated and compared, they will compete also with it. Today many enterprises still compete with the environment unkind products and technological instruments. The care for the enterprise dominates over the environment protection. To consider those before us means to achieve also the level of environment protection quality. The ability of competition with the world competitiveness also means the ability of competitiveness in the permanent development and environment protection. It is possible to preserve the competitive advantage especially with the totality between the planning, administration, control and comprehension of entrepreneur operation content. The domain of permanent development and dealing with the environment is very sensitive domain of the whole proceeding. The permanent development and environment protection is not only the problem of technology, chemistry, economy, and so on, but mainly and first of all of our values and behaviour, that claims different point of view and interstructural viewpoint. Because with intervention it comes to the natural environment to the bigger connected recurrent consequences, we do still not now many of these, that's why the data about the individual environment component are not enough. We need " the common viewpoint. The care for the enterprise means also the care for environment and permanent development and it is the task of management. For this reason the care for environment and permanent development is the component part of responsibility and obligations of management. The care for the environment and the permanent development depends first on administrative workers and their collaborators on all hierarchic levels. The classical operation, limited on the expectation of competitive success in the mass production is exceeded with innovative operation, that achieve the competitive position with different point of view, interstructural collaboration. To achieve this, it is necessary to influence on the starting point of most influential people in administration and content of administration-deciding. "That's why with system and systematic research and innovation of relationship between the people in the enterprise, who has for consequence also the product or service, it appears with them equivalently the system and systematically innovation of starting point for the individual (professional) deciding, that has for the consequence the knowledge examination, communication and professional label or (entrepreneur's) culture (Mulej, 1992).

The care for the enterprise and so the care for environment and permanent development claim (dialectic) system reflection:

- The creative collaboration enables the use of different viewpoints, so the totality of reality is better realized,
- The specialists are inevitable, but for themselves only partly useful, because they see and consider only that part of reality, that the chosen point of view enables them because of the specialization
- Without collaboration they can not supplement to achieve the synergy, that they can not manage individually, but it is urgent,
- The environment protection is realized more successfully with the system of viewpoints, that many individually creatively enforce them.

The influential co-organizations of permanent development and environment protection can become all collaborators in the professional system, mainly the administrator with the decisiding acting. Similar to the yin that cannot exist without the yang, the core philosophy behind is that for sustainable development the creative problem solving process has to include both:

- Logical, analytical and creative problem solving,
- individual and group achievements,
- vertical and lateral thinking (or convergent and divergent thinking)
- IQ and EI (emotional intelligence)
- extrinsic and intrinsic motivation,
- specialization and holism,
- linearity and circularity,
- structure and deterministic chaos (Mulej, 1992).

In the practice it is seen as an example of indicating of environment friendly products, ability of packaging recycle and so on. In the developed world the development mechanisms are already accepted over those subjects that treat irresponsibly with the environment and so they increase the costs (taxes, duties, loss of reputation, and so on) and they decrease the competitive position. In the framework of European unity a prescription 1836/93 for voluntary ecological judgement of enterprises in industry in the sense of ecological administration and judgement; it came into force in 1995. The decision is in the competence of company guidance. It is about something similar, as the standards prescribe ISO 1400x. In this case it is about the system of administration from the environment protection viewpoint. The enterprises will also have to adapt to such way of public information.

9. Environment protection is a result of guided process

In efforts for the improvement of position on the purchaser's market the companies must also consider accordance of operation with valid environment protected prescriptions. It is about the requests consideration of international standards:

- ISO 14001: System of environment treating,
- EMAS,
- Indication of the environment friendly products,
- Evaluation of politic environment protection execution,
- Life Cycle Analysis LCA.

The inclusion of enterprises in the international market, the care for reputation, that the enterprise profit with the environment protection and permanent development, places the politics of environment protection to the base of the professional politics. The environment protection and permanent development is so a basic component of the basic politics and it is confirmed by the highest administration agency. It is about the important decisions about the basic goals of operating and development. The permanent development and environment protection is a result of deliberated, guided process that begins with the preparation of management and it continues with the changing of administrative processes on all levels. It is about the acceptance of basic principles values and rules. More than constraint of the state, the system is important, that is founded on the volunteer offer and creative cooperation. In the contemporary circumstances the creating of teams is getting most important for the creative cooperation, because they search the opportunities, solve the problems and in the end they take decisions.

The planning of environment protection and permanent development begins with market research, it continues with the preparational functions (development) and so on to packaging, delivery, use and after cessation of life period of the product it comprehends the elimination on the environment friendly way. The role of administrative people on all levels can be seen in direction and guarantee of decreasing or preventives of negative effects of environment protection. The important task is the stimulation of creativeness and innovativeness to achieve aims and interests of professional system and also of purchasers' expectations. In the administrative process it is about giving up of old leading styles, old relationships, old-fashioned leading aims, ineffective organizational structures and introducing of such administrative methods, that support creativeness and innovativeness (Kralj, 2004).The innovative operation is operation that, according to the production and all other its components is found on innovations. That's why the following characteristics indicate it:

- Each cost is basically unnecessary. It gets really unnecessary when we know and want to work in more intelligent way.
- Each product or procedure falls sooner or later out of use. So we must incessantly doubt about all given habits, although we count them (still) for perfect and correct. Otherwise we cannot achieve the contemporary quality of life.
- Everyone is concerned about the quality of life and for this reason (as possible as perfect!) Everyone is also concerned for quality of the whole operation and its all components. That's why we have to develop our brains and activate the creativeness of everyone.
- We should search constantly and everywhere the possible novelties! Only rare of them will become innovations, but without intended search, there will be even less of them, probably not enough.
- For this reason we should work as clever people and not as crazy people (Steiner, 2004).

Just the environment protection and permanent development become our every day's care and more and more numerous people care for the environment we live in. On the domain of environment protection, the sense of co independence and the law about hierarchy of sequences are expressed more distinctively, their consideration leads to the catastrophic consequences (Chernobyl, Sandos, Bophal and so on.).

10. Organizational approach

Survey of literature shows that there has been no research about innovation in production processes in manufacturing enterprises in transitional economise. Everybody speaks of technological development only, although it is causing increasing unemployment around the world and other problems such as motivation and environmental degradation, including a dangerous climate change. There is also an unchallenged supposition that in transitional economies owners and managers are equally fond of continuous innovation as are the ones in the most advanced corporations of the world (Markič, 2003).

The term "innovation" is usually associated only with technology, in the strictest meaning of the word (new)products and new methods for making them. Nevertheless, innovation refers to the process of bringing any new, problem solving idea into use. Idea (as a step on their way to innovation) for reorganizing, cutting costs, putting in new budgeting systems, improving communication, or assembling products in teams are all innovations, provided the new idea is useful in its users's judgement. Therefore, innovations in management

methods and organizational practices constitute a wide range of opportunities for "corporate entrepreneurs" (Moss Kanter 1983: 20-21) as well as for other types of activating employees" ability and motivation (eg. 20 keys method, environmental standards ISO 14001, social accountability standards-SA 8000, safety and health standards OHSAS 18001, TQM-total quality (as well as self-regulation and business excellence) management and other innovation management methods) (Markič, 2003).

In efforts for the improvement of position on the purchaser's market the companies must also consider accordance of operation with valid environment protected prescriptions in field of process consumer. The inclusion of enterprises in the international market, the care for reputation, that the enterprise profit with the environment protection and permanent development, places the politics of environment protection to the base of the professional politics (Kralj, 1994). The environment protection and permanent development is so a basic component of the basic politics and it is confirmed by the highest administration agency. It is about the important decisions about the basic goals of operating and development. It is about the acceptance of basic principles values and rules. More than constraint of the state, the system is important, that is founded on the volunteer offer and creative cooperation. In the contemporary circumstances the creating of teams is getting most important for the creative cooperation, because they search the opportunities, solve the problems and in the end they take decisions.

The current position of an organization with regard to the environment can be established by means of an initial processes, innovative operations and management review. The innovative operation is operation that, according to the production and all other its components is found on innovations. The initial review can cover the following:

- identification of legislative and regulatory requirements;
- identification of processes, innovative operations;
- identification of environmental aspects of its activities, products or services so as to determine those that have or can have significant environmental impacts and liabilities;
- evaluation of performance compared with relevant internal criteria, external standards, regulations, codes of practice and sets of principles and guidelines;
- existing business, processes, innovations, environmental management practices and procedures;
- identification of the existing policies and procedures dealing with procurement and contracting activities;
- feedback from investigation of previous incidents of non-compliance;
- opportunities for competitive advantage;
- the views of interested parties;
- functions or activities of other organizational systems that can enable or impede environmental performance (ISO 14004:1996(E), 1996).

The process and results of the initial environmental review should be documented and opportunities for EMS development should be identified. Such a partial approach can lead to technically and economically inappropriate solutions. The new model which promotes production processes innovation was derived from the model of managing company policy following the interest theory and business excellence. It was conceived in the frame and interdependence of both objective and subjective starting points of initial change agents as well as from process knowledge of process managers. New dimensions like business excellence, production processes innovation, companies" capacities and opportunities for

continuous innovation, as well as values, knowledge, skills and feelings of change agents, will be added to the basic model (Markič, 2003).
Organizational systems or models need lean organization. Lean organization is first step of processes innovation and environmental protection. Possible measures, which the lean organization can encompass, include the fields of organizational measures, reconstruction of existing processes and products, the use of modern equipment and techniques as well as the introduction of new technologies. The dimensions of business excellence, especially production excellence, of production processes renovation, a company's or other organization's capacity to innovated as well as the values, knowledge, skills and feelings of production processes innovation agents, are added to the basic model (Kralj, 2005). The renovation of production processes results from lean organization, which is based on up-to-date technological and organizational starting points. Market need new consumers. Consumers need new products and services. Only innovative lean flexible organization could be the answer. Lean organization is market-driven; a buyer's market and innovation society prevail and acts as change generators in a company or other organization (Markič, 2003). Figure 1 presents an approach to environmental management system integrated with other management requirements.

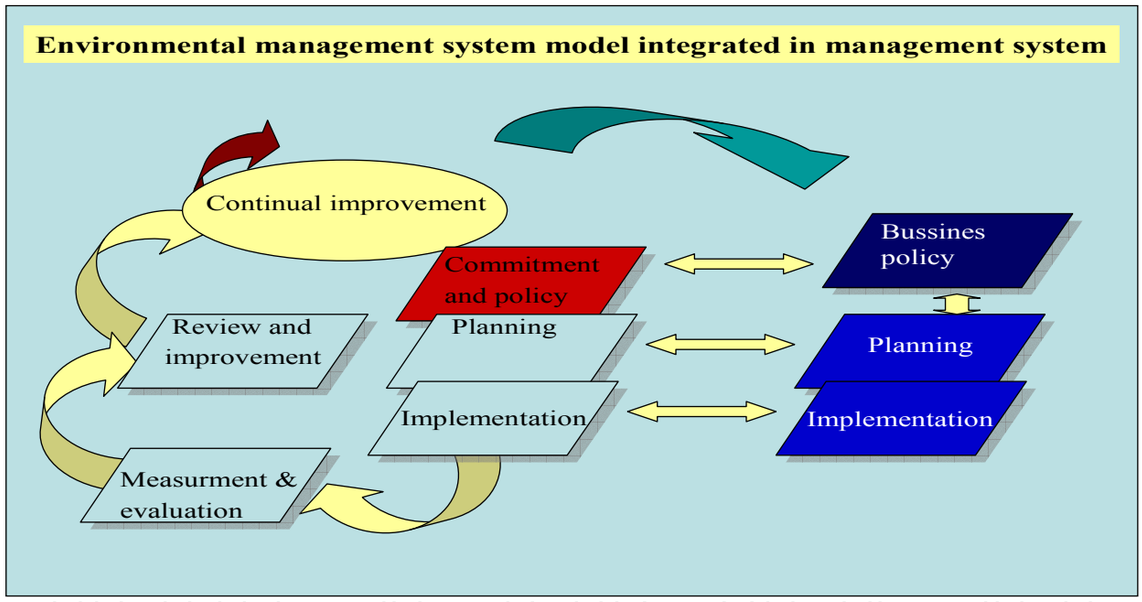


Fig. 1. Environmental management system integrated with other management requirements

11. Processes innovation is a step to environment protection

New economic issues dictate the redefining of economic interests in the wake of the recognition, that the natural environment is a limited production factor and not, as had previously been considered, only the supplier of raw materials. These have previously been free goods without an assigned market value, while the environment has been an agent for the neutralization of wastes and emissions of production and consumption (Steiner, 2004). The integral-orientated mentality represents a deviation from the previously established linear way of thought and activity, which is no longer sufficient in the light of the contemporary complexity of events. However, these one-dimensional elements are soon

faced with insurmountable obstacles. This is why the integration of environmental goals into the system of entrepreneurial policy is so vital. In theory, we can distinguish the ones, which pertain to the inflow (rational use of raw materials, materials, energy, etc.), and those, that relate to the outflow (absolute limitation of waste and emissions), with the simultaneous maximization of waste re-use.
The continual adaptation for enforcement of competitive ability of professional system dictates the stimulation of creativeness, intensity and novelty (Wright, 2004). That's why the state measures and people's habits enable in the innovative society, that it exists and has the supremacy:

- Contemporary e.g. creative democratization in the whole society, all associations and mutual relations,
- Contemporary, e.g. to the tenderness very demanding market and so the authority of innovative instead of skilled workers,
- Contemporary comprehension of ownership, which sense is not the interest for incomes as in the Middle Ages (not " the right to the use and misuse" as in Roman law), but the interest for the competitiveness, inclusively with social profit, on the basis of innovation creativeness,
- Contemporary comprehension of innovations,
- Contemporary e.g. innovative operation,
- Contemporary e.g. innovative enterprise, that is not defined as ownership (of smaller) companies, but as innovative administration of innovation and innovations,
- Innovative society tries today to achieve purposely also with measurements for "the society of perfect quality" (Mulej, 1992).

12. Entrepreneur environmental policy

The environment protection and permanent development is a complex process, where the earlier events have more influence than the later one.
From here it originates the sense of activity planning of these, who administrate, who define the aims, who organize and so on. Experience show that the environment protection and permanent development as a part of entrepreneur's philosophy is not carried into effect enough. The business system is not isolated from the environment, but it is interweaved with other business systems, that's why the environment protection and permanent development with processes innovation are also results of social environment (Kralj, 2005), which based on clearly policy and strategic management process.
International economic practice as well as economic practice in Slovenia, has conformed to ISO 14001 (Environmental management systems – Requirements with guidance for use), as the role of these standards is raising levels of environmental management in business. Top management shall define the organization's environmental policy and ensure that, within the defined scope of its environmental management system, it:

a. is appropriate to the nature, scale and environmental impacts of its activities, product and services,
b. includes a commitment to continual improvement and prevention of pollution,
c. includes a commitment to comply with applicable legal requirements and with other requirements to which the organization subscribes which relate to its environmental aspects,
d. provides the framework for setting and reviewing environmental objectives and targets,

e. is documented, implemented and maintained,
f. is communicated to all persons working for or on behalf of the organization, and is available to the public.

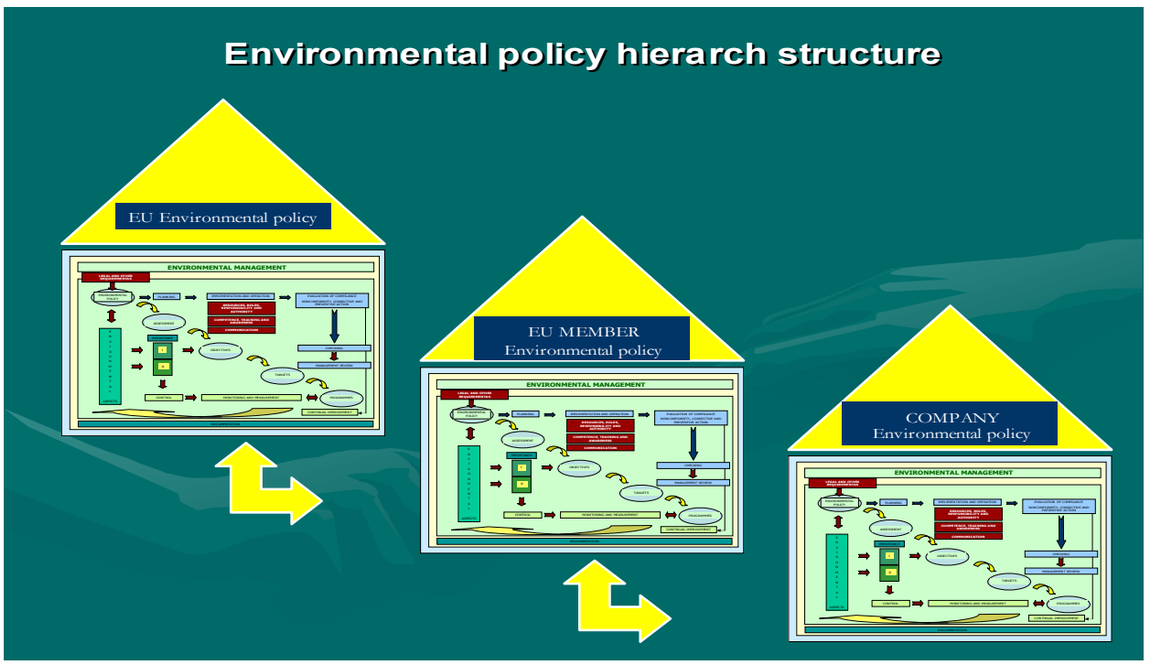


Fig. 2. Environmental policy hierarch structure

13. Modeling of recycling and environmental waste management in constructions

Taking action on waste is essential, since we are consuming natural resources at an unsustainable rate and contributing unnecessarily to climate change. Each year we generate about 100 million tonnes of waste from households, commerce and industry combined. Most of this currently ends up in landfill, where biodegradable waste generates methane, a powerful greenhouse gas. And much valuable energy is used up in making new products which are later disposed of, so also contributing to climate change (www.defra.gov, 2008).
The Government's *Waste Strategy for England 2007* identifies the good potential to increase resource efficiency in construction and reduce waste. The construction industry is a major source of waste in England, using the highest tonnage of solid material resources in any sector, over 400 million tonnes. The construction, demolition & excavation (CD&E) sector generates more waste in England than any other sector, and is the largest generator of hazardous waste, around 1.7 million tonnes. By comparison, the sector accounts for 9–10% of GDP. Objectives of the waste strategy for the construction sector include:

- provide the drivers for the sector to improve its economic efficiency by creating less waste from design to demolition
- treat waste as a resource, re-using and recycling more and asking contractors for greater use of recovered material
- improve the economics of the re-use and recycling sector by increasing demand and securing investment in the treatment of waste (www.defra.gov, 2008) .

13.1 Strategies for recycling building materials

From these statements arise the role and the importance of Environmental Management and Waste Management as waste being one of the by-products of constructions. There needs to be a change in the Waste Management approach philosophy – from managing to economizing waste (Kralj, 2005). This approach means a change in the philosophy of the management of a company, which proves that environmental policy is a part of business policy. So the elements of Environmental Management are included in all elements of business processes, activities and products of this company as in planning, producing and the life cycle of individual products. Top management shall ensure that the environmental policy:

a. is appropriate to the purpose of the organization,
b. includes a commitment to comply with requirements and continually improve the effectiveness of the environmental management system,
c. provides a framework for establishing and reviewing environmental objectives,
d. is communicated and understood within the organization, and
e. is reviewed for continuing suitability (IWA 1:2005 (E) ,2005).

The organization's strategic planning and the policy provide a framework for setting of objectives. With management review only control the activities which leading to improvement of the organization's performance. The objectives should be capable of being measured in order to facilitate an effective and efficient review by management. When establishing these objectives, management should also consider:

- current and future needs of the organization and the markets served,
- relevant findings from management reviews,
- current product and process performance,
- levels of satisfaction of interested parties,
- self-assessment results,
- benchmarking, competitor analysis, opportunities for improvement, and
- resources needed to meet the objectives (IWA 1:2005 (E) ,2005).

For this purpose there are various tools and regulations in the organizational and technical-technological field and in the field of controlling human resources and the treatment in line with employee's abilities. The consequences of this (tools and regulations) are economy effects which develop into Sustainable Development effects (Kralj, 2004). Especially in the case of environmental protection and Environmental Management it is important that we are very cooperative, creative and aim-oriented (Kralj, Krope, Goricanec, 2005).
Recycling and reuse of materials have long been associated with wise construction practices. Experienced contractors are now reaping the economic advantages of Construction Waste Management. Communities are also seeing the side benefits as listed below.

13.2 Research of recycling of waste

Europe is entering a new energy landscape. Our import dependency is 50% today, and certain to rise. Our hydrocarbon reserves are running down. Energy is becoming more expensive. Our infrastructure needs improving; EUR 1000 billion is needed over the next 20 years to meet expected energy demand and replace ageing infrastructure. And global warming has already made the world 0.6°C hotter. These challenges are common to all of Europe. They require a European response. At the end of 2005, European Heads of State and Government reunited at Hampton Court (United Kingdom) call for a true European Energy

Policy (ec.europa.eu, 2007). In Europe buildings use between 5 to 15 per cent energy in so crucial contribute to greenhouse emissions (ec.europa.eu, 2007. Study of heat protection and efficient use of energy in buildings brings new recognition in area of planning, performance and using of objects in their life cycle. It has theoretical and practical meaning. Efficient use of energy in buildings affects a lot of factors, including but not limited to sustainable development aspect in planning, environmental management aspect in business construction processes, care for natural resources and their efficient use, achieving technical specifications of construction products and reducing construction waste with method of sustainable production and raw materials. Use of recycling construction materials in civil construction and efficient use of energy in buildings present one of the very important method for efficient sustainable use of materials and energy. Up until now, issues of modeling and improvement of heat protection and efficient use of energy in buildings have not been adequately addressed as it is required by sustainable development approach. Ecological concerns provided the need for intensive research of recycling of waste. Why is such kind of study important? Because of environmental protection:

- by minimizing waste,
- saving of fossil fuels due to recycling,
- to improving recycling process,
- optimized use of available resources,
- improved intellectual capital,
- optimized, effective and efficient processes,
- enhanced organizational performance, credibility and sustainability
- reduced costs.

The care for reputation, that the enterprise profit with the environment protection and permanent development, places the reprocessing and recycling to the base of the organizational goals (oikos.com, 2007). The process of recycling begin by product design and development. Some of these benefits may include: lower costs, stimulation of innovation, new business opportunities, and improved product quality (Kralj, 2006). Because of stimulation of innovation, new business opportunities and lower costs, the process of recycling into product design and development is so important. Figure presents construction waste material: concrete from lightweight aggregates, which is typical construction waste. In our case we studied the possibilities for the recycling. If you look at the recycling facts, you will see that since 1990, the United States has improved dramatically in their recycling activities. Recycling facts report that fifteen years ago, the U.S. recycled roughly fifteen percent of our waste materials, which today has doubled to thirty percent! The following recycling facts are both interesting and fun bits of information to increase your knowledge on the art of recycling (Rue, L.W., Byars, L.L, 1992). There are many uses for the recycled material in products that we use every day. Some of the more common ones are paper towels, aluminum, and newspaper. The reason are increasingly better technical possibilities for waste processing which reduce the burden on the environment and are very economic. Another reason refers to the use of natural sources. An additional stimulation for searching new possibilities of waste disposal is the waste disposal levy. If we want to change the proportion between waste being disposed and waste being processed in favour of the later, there will be a lot of challenges for us in the future (www.arso.gov.si, 2006). In constructions waste disposal represents one of the main issues of Environmental Management and has an important influence on the environment, especially hazardous

waste. Waste Management includes the collection, movement, processing, and disposal of waste, and also the monitoring of these activities.

13.3 Waste management review

Review shall include assessing opportunities for improvement and the need for changes to the environmental management system, including the environmental policy and environmental objectives (ISO 1401:2004). Records from management reviews shall be maintained. Inputs to evaluate efficiency as well as effectiveness of the environmental management system should consider the customer and other interested parties and should include:

- status and results of environmental objectives and improvement activities,
- status of management review actions items,
- results of audits and self-assessment of the organization,
- feedback on the satisfaction of interested parties, perhaps even to the point of their participation,
- market-related factors such as technology, research and development, and competitor performance,
- results from benchmarking activities,
- performance of suppliers,
- new opportunities fro improvement,
- control of process and product nonconformities,
- marketplace evaluation and strategies,
- status of strategic partnership activities,
- financial effects for environmental related activities, and
- other factors which may impact the organization, such as financial, social or safety conditions, and relevant statutory and regulatory changes.

By extending management review beyond verification of the environmental management system, the outputs of management review can be used by top management as inputs to improvement processes (ISO 1401:2004). Selected output should be communicated to demonstrate to the people in the organization how the management review process leads to new objectives that will benefit the organization. Figure 3 presents an approach to environmental management - waste management.

13.4 Life-cycle assessment (LCA)

Life-cycle assessment (LCA) is a process of evaluating the effects that a product has on the environment over the entire period of its life thereby increasing resource-use efficiency and decreasing liabilities. It can be used to study the environmental impact of either a product or the function the product is designed to perform. LCA is commonly referred to as a "cradle-to-grave" analysis. As LCA is a continuous process, companies can begin an LCA at any point in the product/function cycle. LCA can be used for the development of business strategy purchasing decisions, for product and process design and improvement, for setting eco-labeling criteria and to communicate about environmental aspects of products (images.google.si, .2008) . Key elements are:

- Identifies and quantifies the environmental loads involved; e.g. the energy and raw materials consumed, the emissions and wastes generated;
- Evaluates the potential environmental impacts of these loads;
- Assesses the options available for reducing these environmental impacts.

Life Cycle Analysis is essentially a method of considering the entire environmental impact, energy and resource usage of a material or product. It is often known as a 'cradle-to-grave' analysis and can encompass the entire lifetime from extraction to end-of-life disposal. Life cycle analysis can be an extremely effective way of linking many different aspects of the environmental impacts of materials usage. The scope of a life cycle analysis can be adjusted to suit a particular case (images.google.si, 2008). Figure 5 schematically shows how the disparate areas under the heading of 'environmental materials' can be linked via a life cycle analysis approach.

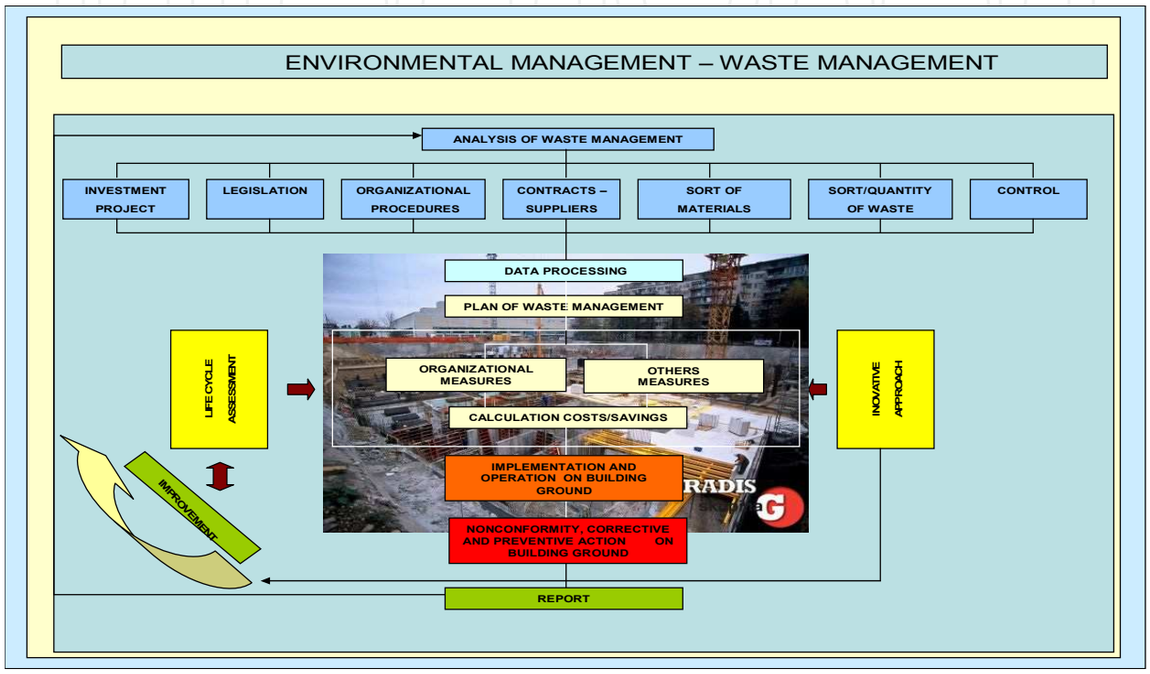


Fig. 3. Environmental management – waste management

13.5 Environmental management and environmental indicators

Managing quality to achieve excellence means managing an organization, business or unit so that every job, every process, is carried out right, first time, every time. To be successful this must be viewed as a holistic approach that affects, and involves, everyone – employees, customers, suppliers, shareholders and society. It must be driven from within the organization, as it cannot be imposed from outside and is not a simply a cost-cutting or productivity improvement exercise. The EFQM Excellence Model was introduced at the beginning of 1992 as the framework for assessing organizations for the European Quality Award. It is now the most widely used organizational framework in Europe and it has become the basis for the majority of national and regional Quality Awards. The EFQM Excellence Model is a practical tool that can be used in a number of different ways:

- As a tool for Self-Assessment
- As a way to Benchmark with other organizations
- As a guide to identify areas for Improvement
- As the basis for a common Vocabulary and a way of thinking
- As a Structure for the organization's management system (www.efqm.org , 2008)

The Model, which recognizes there are many approaches to achieving sustainable excellence in all aspects of performance, is based on the premise that:
Excellent results with respect to Performance, Customers, People and Society are achieved through Leadership driving Policy and Strategy, that is delivered through People, Partnerships and Resources, and Processes.
One of the most widely used voluntary environmental initiatives is the ISO 14001environmental management standard. ISO 14001 is an international environmental management standard that offers a systematic approach to compliance and continual improvement while being flexible and widely applicable to a variety of organizations, such as manufacturers, service providers, and government agencies (Kralj, 2007).
ISO 14001 was developed by the International Organization for Standardization to provide a template for environmental management systems. In order for facilities to obtain ISO certification they must:

- Develop a policy statement on the organization's commitment to the environment.
- Identify the environmental impacts of products, activities and services.
- Make a commitment to compliance with applicable laws and regulations.
- Set environmental goals for the organization, anddeveloping the means to achieve them
- Establish roles and environmental responsibilities within the organization.
- Maintain documents about the EMS and relatedprocedures.
- Monitor key activities and track EMS performance to correct problems and prevent reoccurrences.
- Audit the EMS to verify that it is effective and achieving objectives and targets to ensure that it is still suitable and appropriate.
- Make a commitment to continual improvement of the EMS (ISO 14062:2002(E), 2002).

An EMS is the organizational structure and associated responsibilities and procedures to integrate environmental considerations and objectives into the ongoing management decision-making processes and operations of an organization. According to an EPA summary, an EMS is a continual cycle of planning, implementing, reviewing and improving the processes and actions that an organization undertakes to meet its business and environmental goals. Most EMSs are built on the "Plan, Do, Check, Act" model. This model leads to continual improvement based upon:

- Planning, including identifying environmental aspects and establishing goals [plan];
- Implementing, including training and operational controls [do];
- Checking, including monitoring and corrective action [check]; and
- Reviewing, including progress reviews and acting to make needed changes to the EMS (Kralj, 2007).

Environmental indicators are powerful tools that serve many purposes, useful as tools for performance evaluation and public information. Together with its member countries, the OECD has established a common approach and framework for developing, measuring and using environmental indicators: the OECD Core Set and its core environmental indicators (CEI); several sets of sectoral environmental indicators (SEI) (e.g. transport, energy); a small set of key environmental indicators (KEI) (www.oecd.org, 2008). Environmental indicators are among the most applicable tools used for the purposes of environmental reporting. Based upon numerical data demonstrating the status, specific characteristic or development of a certain phenomenon, they can warn of specific issues. They help us measure and determine the quantity of diverse data constituting a complete data collection. The indicators are, in fact, data that have been collected and presented in an agreed manner,

with the purpose of establishing the connection between the existent data and the targets of the environmental policy.
Reporting of environmental data is measured by and as the level of completeness of environmental data reported in compliance with the requirements stipulated by the European Environment Agency (EEA). This level is presented in an assessment established by the EEA in its annual Progress Report – Priority Data Flows in EIONET, hereinafter referred to as PDF, addressed to the Management Board of the EEA. Picture 1presents Reporting of environmental data – level of completeness of environmental data collected in compliance with the requirements stipulated by the European Environment Agency (EEA) (Kralj, 2008).

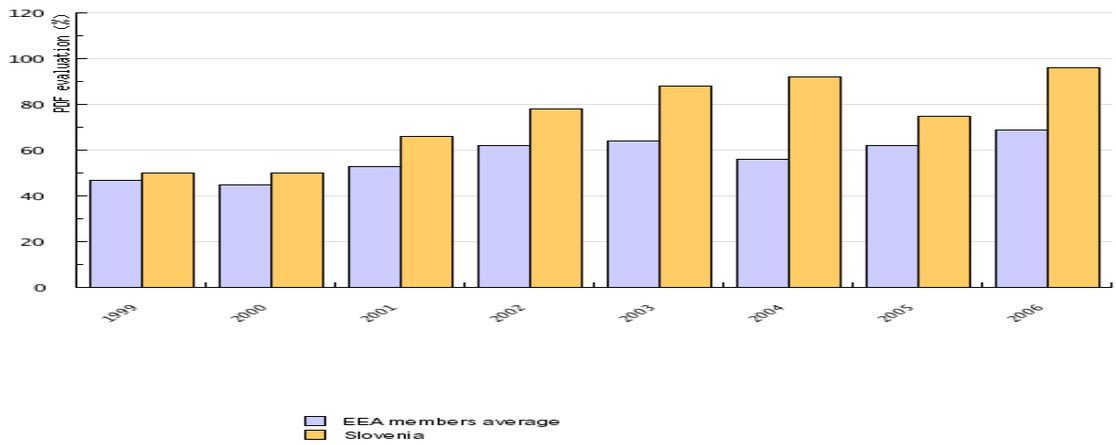


Fig. 4. Reporting of environmental data. Source: Progress Report – Priority Data Flows in EIONET, European Environment Agency, 2007.

The obligation to report to the European Environment Agency by the Republic of Slovenia arises from Article 8 of the Agreement between the European Community and the Republic of Slovenia concerning the Participation of the Republic of Slovenia in the European Environment Agency and the European Environment Information and Observation Network, signed and ratified by the Slovenian Parliament (OJ RS – MP No 18/01) which determines that the Republic of Slovenia should provide data according to the obligations and practices established in the Agency's work. So far, we have communicated to the EEA reports on the state of water, air quality and air emissions, protected areas, state of soil, implementation of the CORINE Land Cover project, etc. The preparation and communication of reports is implemented through the EIONET Network in Slovenia. The compliance of Slovenia's reporting with the requirements defined by the EEA has been subject to assessment since 2000. In this period Slovenia has, as the majority of other EEA Member States, in particular new EU member states, shown significant progress. Decline of average evaluation value in 2004 was caused by inclusion of new reports in PDF, stricter criteria and accession (or collaboration) of new countries to EEA. Pursuant to the PDF criteria, Slovenian reports have achieved 96% conformity with the EEA's reporting requirements, placing Slovenia in 3th place among 37 assessed countries.

13.5.1 Methodology

The research topic is a comprehensive business organization process inside an enterprise in a modern, competitive economy, with particular emphasis on environmental management

and the implication of ISO 14000 Standards. The research aims at establishing the significance of environmental management in an enterprise's own perception, in the perception of a customer and in the perception of a wider social community. It also aims at establishing the kind of environmental indicators in enterprises which show the state in the area of environmental features or environmental management development, respectively. An example of application was based on a random sample of 120 Slovenian enterprises (http//www. gzs.si/register. Enterprise Register (23.12.2006), those that are registered for integrated environmental permit according to IPPC (Integrated Polution Prevention and Control) directive, as well as the holders of the SIST EN ISO 14001: 2005 Certificate and those operating in line with EMAS (Eco-Management and Audit Scheme) regulations. The results include questionnaire replies from 120 received questionnaires.

3.1 Research purpose

The purpose of this paper is to study and define the most important indicators influencing environmental management effectiveness and efficiency in enterprises, focusing on Slovenian enterprises. The focus is on environmental indicators as the result of environmental management, environmental policy and a strategic direction towards achieving environmental goals as well as constant and continuous training and awareness-raising in stakeholders, employees, customers, suppliers and wider social community.

13.5.2 Research objectives

The research objective was to set or determine and prove the role and significance of environmental management indicators in an enterprise's operations. The reflection included interdisciplinary thinking which enables us to understand and manage the process of environmental management in terms of sustainable development. Based on the assumption that an enterprise respects and complies with environmental legislation, it was analitically examined what types of environmental indicators and measures contribute to a constant and continuous improvement in terms of sustainable development.

In the research the following assumptions were tested:

- assessing the environmental care (protection) in enterprises is practiced on a declarative level (rather than being actually practiced);
- enterprises holding a certificate of environmental management are superior in environmental indicators and effectiveness to those that do not hold such a certificate.

13.5.3 Research method

The research was designed as a qualitative case study as defined by Sharan (1998). It was conducted in the period of 2007 and 2008.

13.5.3.1 Sample

The basic information on the sample unit (theorganization studied) and the respondent (the person who completed the questionnaire), was acquired on the basis of the responses from the first (8 questions) and second cluster or set of questions (the first 5 questions). First of all, the answers that describe the main characteristics of the sample (Figure 2 to 9) are presented. The research included 120 enterprises performing various activities. Among them, the highest number goes to limited liability companies (36.5 %), joint-stock companies (28.7 %) or and institutes (14.8 %), while the lowest number goes to sole proprietors,

unlimited liability companies, or and investment companies, and companies of other legal form (altogether 14.8 %). More than half of enterprises (51.8 %) are involved in servicing activities while 30 % are involved in manufacturing. Other enterprises are either predominantly servicing or predominantly manufacturing. The sample's structure considering the years of operation is as follows: 40.9 % are in operation for more than 30 years, 21.6 % between 16 and 30 years and 37.5 % up to 15 years. The research includes mainly large enterprises. 33 % of the studied enterprises employ above 250 people , 37.2 % from 51 to 250 people, 14.2 % from 11 to 50, and 15% up to 10 people. In our research all the listed enterprises are included.
25 % of the enterprises created the added value of up to 25,000 € per employee, 50 % from 25,001 to 50,000 €, and 25 % above 50.000 €. 40 % of the enterprises created above 1,000,000 € of net profit in 2006, 28.2 % from 100,001 to 1,000,000, and 31 % up to 100,000 €. 41.3 % of the enterprises have established an environmental management system in compliance with ISO 14001:2004 Standard, 34.9 % of the enterprises have established such a system in compliance with the legislation in force in the Republic of Slovenia, 3.7 % of the enterprises have established other systems. One fifth of the enterprises stated that they had no environmental management system established. Among the enterprises holding an environmental certificate, 65.2 % held the ISO 14001:2004 Certificate, 6.1 % held an environmental sign, 4.5 % held an environmental permit and 24.2 % held other certificates (data for the year 2007).

13.5.3.2 Research limitations

A qualitative case study was conducted to acquire information and consiquently research results from the completed questionnaires. However, only part of the research results is presented in this paper. The findings that emerge from the research results cannot be generalized to all forms or types of environmental management.

13.5.4 Research results

13.5.4.1 General information

Only part of analyses' results are presented here. The analyses were conducted with the aim of finding the most suitable environmental indicators and indicating devices in differents areas in an organization. The focus of this paper are two areas:

- leadership and
- processes.

By way of factor analysis, the most suitable indicators were selected. Based on the indicators, the indicating devices were set. They represent the average values on the selected indicators.

13.5.4.2 Leadership

In the continuation, an example of leadership and a set of questions concerning the leadership characteristics in an organization - measured on a scale from 1 (I do not agree at all) to 5 (I agree entirely) - are presented. The focus is on two aspects of leadership: a general view on management of an enterprise and leadership jn terms of environmental management, presuming that these two aspects are interrelated. By way of factor analysis using the Principal Axis Factoring method, followed by Varimax Rotation, the most suitable indicators to assess the above mentionened dimensions aspects of leadership (3 for a general view on management of an enterprise and 5 for environmental management) were selected among 23 indicators:

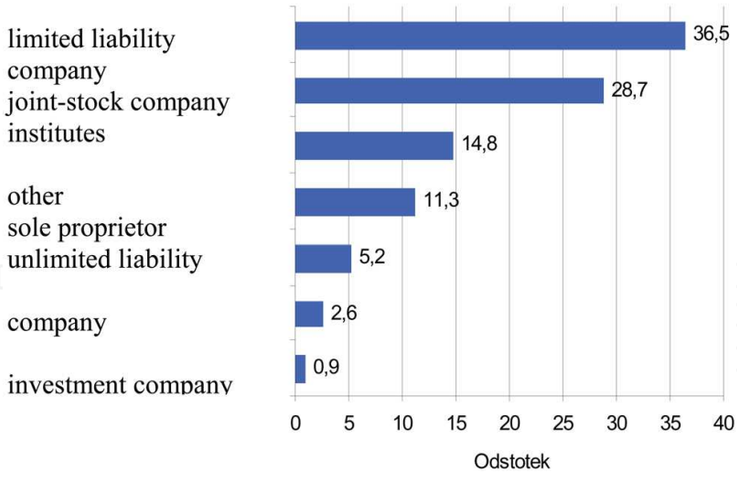


Fig. 5. Enterprise's format

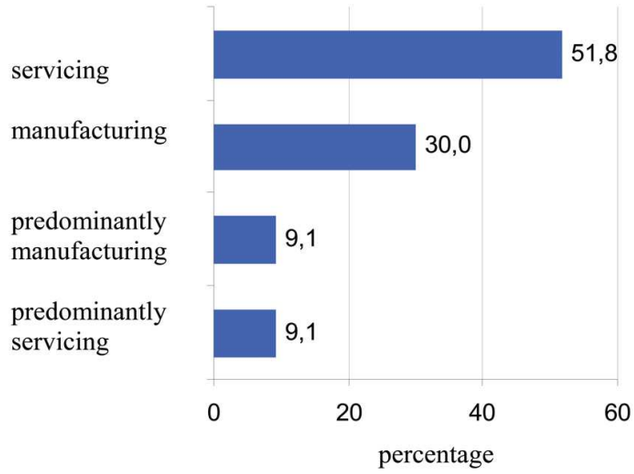


Fig. 6. Enterprise's activity

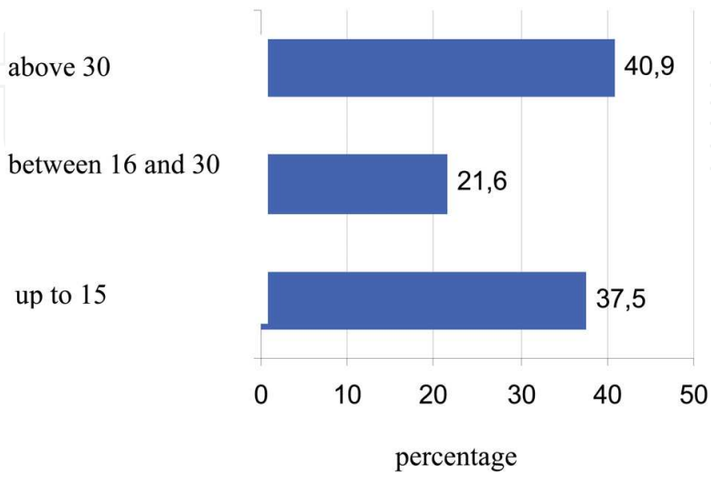


Fig. 7. Years of operation

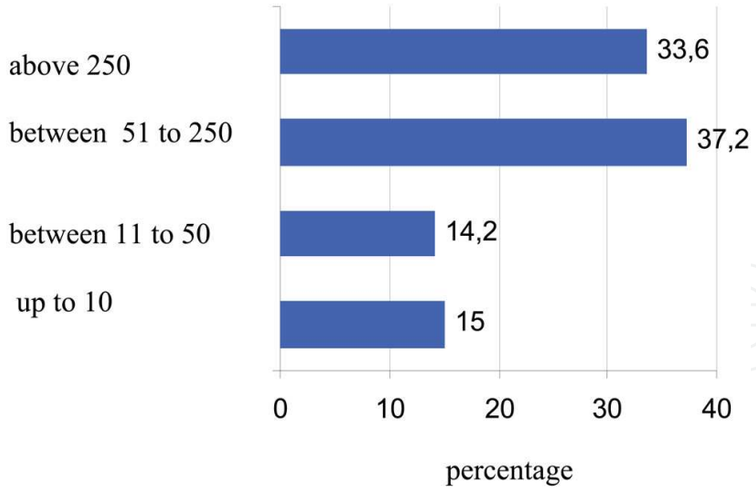


Fig. 8. Number of employees

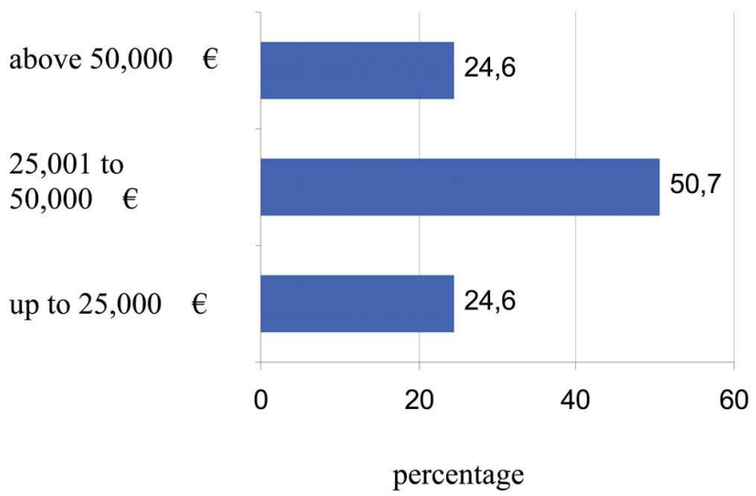


Fig. 9. Enterprise's activity

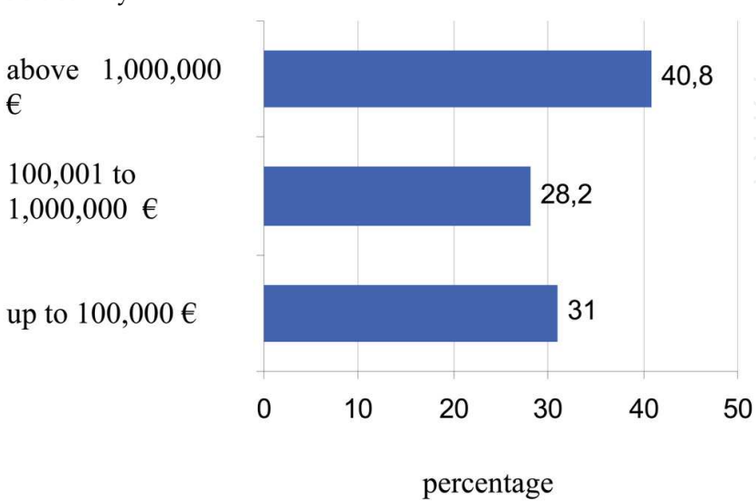


Fig. 10. Enterprise's activity

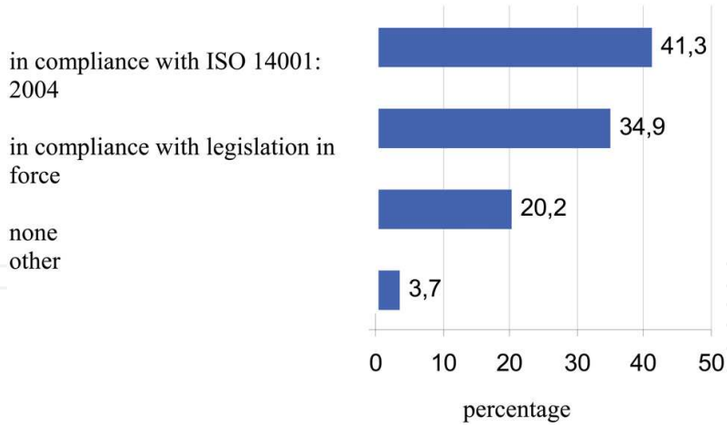


Fig. 11. Enterprise's activity

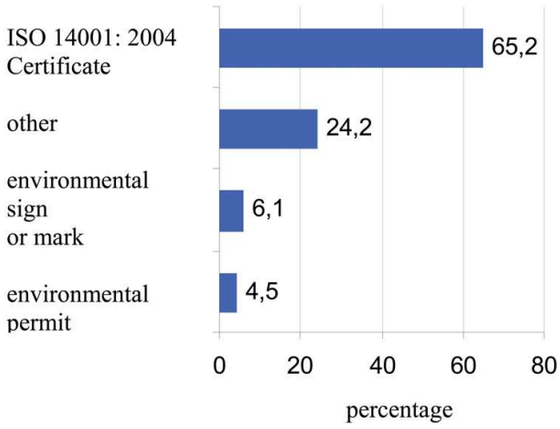


Fig. 12. Enterprise's activity

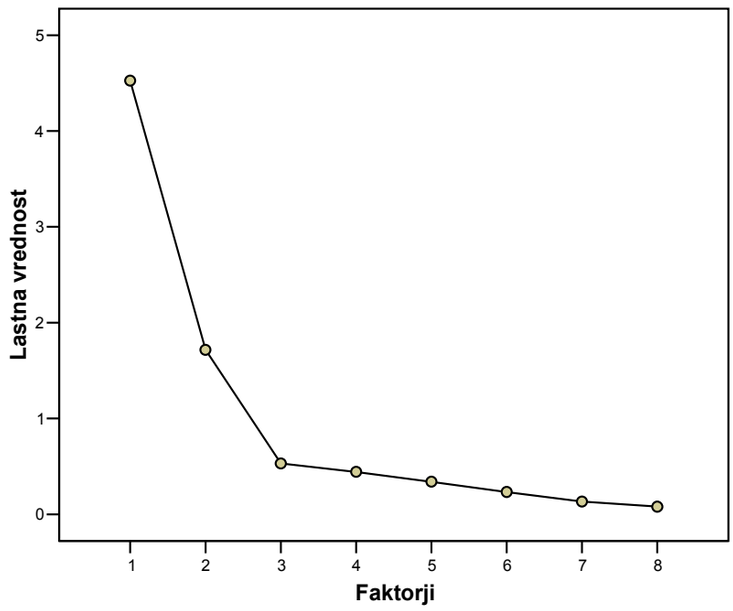


Fig. 13. Graph presenting proper values – leadership

The graph proves that 8 variables can be combined into 2 factors.Using these 2 factors, 72.1 %(after Varimax rotation 53.0 % with the first factor and 19.1 % with the second factor) of the whole variable variance can be explained.

In Table 2 factor loadings after an orthogonal VARIMAX rotation are presented. The factor structure is clear as each indicator has high factor loadings only with one factor. The highest indicators of *leadership quality indicating device in terms of environmental management* are:

- clear vision, strategy and goals;
- careful planning, executing and enhancing measures;
- efficiency and effectiveness assessment;
- promoting initiative and searching new opportunities and solutions for tackling environmental problems
- providing information about environmental issues.

The dimension is most prominently marked by the indicator *Environmental management measures are planned, executed, controlled and enhanced incessantly*, in which the highest factor loading is obtained. The Cronbach reliability coefficient (alpha) value, which measures the reliability of a measuring instrument, is 0.9, suggesting the appropriateness of the choice of indicators.

The indicator *Leadership quality in general* was determined by the followingindicating devices:

- encouraging and promoting autonomy at work;
- encouraging and promoting employee co-operation in decision making and
- identifying the needs for organizational changes

The indicator *Leaders encourage and enable their employees to co-operate in decision making* has a lower factor loading and thus a lower contribution to this dimension. The Cronbach coefficient value is 0.9, therefore, the indicators serve as a reliable measuring instrument for assesing leadership in general.

	Leadership in the area of environmentl management	**Leadership in general**
Environmental management measures are planned, executed, controlled and enhanced incessantly.	0.86	0.14
Leaders assess the efficiency and effectiveness of environmental management business processes.	0.85	0.16
Leaders encourage launching initiatives, searching new opportunities and solutions for tackling environmental problems.	0.80	0.21
Leaders efficiently inform their employees about environmental issues.	0.78	0.25
The management has a clear vision, strategy and objectives concerning environmental mangement.	0.70	0.20
Leaders encourage and promote autonomy at work.	0.19	0.95
Leaders identify the needs for organizational changes and are first to opt for changes.	0.13	0.94
Leaders encourage and enable their employees to co-operate in decision making.	0.33	0.67

Table 2. Leadership – factor loadings after an orthogonal rotation

On the basis of the reliability coefficients, the selected indicators can be used for computing indicators, namely the average value of each indicator, pertaining to a certain dimension as shown in Table 3.

The enterprises statistically significantly assessed *leadership in general* with a higher average grade (3.8) in comparisson to *Leadership in terms of environmental management* (3.3). The value of t-test (Paired Sample t-test) is 5.28 not exceeding a 99 % confidence level. The value of the Pearson correlation coefficient is 0.4 ($p<0.01$), which shows a moderately strong positive correlation between the dimensions. The enterprises that positively or favourably assessed *Leadership in general,* normally positively assessed *Leadership in terms of environmental management.*

	N	Min	Max	Arithmetic mean	Standard deviation
Environmental management measures are planned, executed, controlled and enhanced incessantly.	110	1	5	3.35	1.21
Leaders assess the efficiency and effectiveness of environmental management business processes.	110	1	5	3.16	1.12
Leaders encourage launching initiatives, searching new opportunities and solutions for tackling environmental problems.	110	1	5	3.22	1.14
Leaders efficiently inform their employees about environmental issues.	110	1	5	3.18	1.11
The management has a clear vision, strategy and objectives concerning environmental mangement.	112	1	5	3.71	1.13
Leadership in the area of environmental management	113	1	5	3.33	0.98
Leaders encourage and promote autonomy at work.	101	1	5	3.89	0.88
Leaders identify the needs for organizational changes and are first to opt for changes.	110	1	5	3.91	0.86
Leaders encourage and enable their employees to co-operate in decision making.	111	1	7	3.65	1.01
Leadership in general	111	1	5	3.81	0.83

Table 3. Descriptive statistics of leadership indicators and dimensions

13.5.4.3 Processes

Organizations plan, implement and control processes with a view of meeting their customers' and other participants' expectations and requirements as well as generating greater value for them. Managing functioning of an environmental management system is part of business processes in an organization which is concerned with sustainable development. We were interested in the processes related to environmental management, which were tested by way of the following indicators:

	Percentage
There is no Environmental Management Department.	75.4
Environmental Management Department is inside another department/function.	14.0
There is an independent Environmental Management Department.	10.5
Total	100

Table 4. Is there a special department dealing with environmental management in your enterprise?

Three quarters of enterprises do not have a special Environmental Management Department, 14 % of them have such a department inside another department/function, 10.5 % of them have an independent Environmental Management Department, as shown in Table 4. The obtained data show the leadership's attitude towards the organization of Environmental Management Department. In some enterprises, environmental management is an outsourced service.

A clearer picture of the situation and entity in charge of the analysis of business processes and environmental management (whether an enterprise has an Environmental Management Department or not) is shown in Table 5. One fourth of the enterprises were not willing to/did not know how to answer the question - who is in charge of such an analysis; most of them belong to the group which does not have a special Environmental Management Department. Interestingly, among the enterprises that have a special department dealing with environmental management, the analysis of business processes and environmental management is undertaken by the same department only in 35.7 % of the enterprises. In one third of the enterprises that do not have such a department the analysis is undertaken by the executives. It is a fact that the familiarity with the processes from the environmental management perspective does not depend only on the Environmental Management Department but also on the accountability and competence as well as working methods in a particular enterprise. The analyses of processes are undertaken by those in charge of particular processes; an ecologist may be a member of such a team.

		Is there an Environmental Management Department in your enterprise?		Total
		yes	no	
Who is in charge of the analysis of business processes and environmental management in your enterprise?	No answer.	7.1%	31.4%	25.4%
	Nobody.		12.8%	9.6%
	Executives.	25.0%	33.7%	31.6%
	Other departments	25.0%	12.8%	15.8%
	Environmental Management Department.	35.7%	2.3%	10.5%
	Other.	7.1%	7.0%	7.0%
Total %		100.0%	100.0%	100.0%
Total N		28	86	114

Table 5. Person in charge of the analysis of business processes and environmental management according to whether the enterprise has a special Environmental Management Department or not

Table 6 shows the frequency of the efficiency of environmental management monitoring. One fifth of the enterprises do not monitor it at all, 27. % of the enterprises monitor it annually, 16.5 % semi-annually, 9.6 % every three months, 19.1 % monthly, and only 7 % weekly or even more often.

	Percentage
Not at all.	20.9
Annually.	27.0
Semi-annually.	16.5
Every three months.	9.6
Monthly.	19.1
At least weekly.	7.0
Total	100

Table 6. How frequently do you monitor the efficiency of environmental management?

Concerning the shares in terms of types of environmental management indicators' monitoring, Table 7 shows that most enterprises identify the indicator of waste and sewage sludge (60 %), half of them waste water, four tenths of them noise, waste energy and traffic as well as waste air, and 27.8 of them soil. Natural resources are monitored by 24.3 % of the enterprises, the nature is monitored by 15.7 % of them, electromagnetic radiation by 9.6 % of them and other indicators by 3.5 % of the enterprises. 27 % of the enterprises monitor none of the environmental management indicators. The scales of all the above presented indicators were transformed to the values from 1 to 5, except in cases when an organization identifies none of the indicators (in such a case, the lowest value equals 0). Next we designed an indicator called »processes«, which represents the average of all the indicators. Due to rather low correlations between the indicators, the measuring instrument is less reliable, the value of Cronbach coefficient namely equals only 0.56.

	%
Waste and sewage sludge.	60.0
Wastewater.	50.4
Noise.	40.9
Energy and traffic.	40.9
Waste air.	40.0
Soil.	27.8
None.	27.0
Natural resources.	24.3
Nature.	15.7
Electomagnetic radiation.	9.6
Other.	3.5

Table 7. How many environmental management indicators do you identify?

Table 8 shows the descriptive statistics of the indicators and dimensions for processes. The value of the indicator 'processes' is below the average value, which shows that environmental management processes have mainly not been introduced or yet put in place in the enterprises studied.

	N	Min	Max	Arithmetic mean	Standard deviation
Is there an EM Department in your enterprise?	114	1	5	1.7	1.3
How frequently do you monitor the efficiency of environmental management?	115	1	5	2.5	1.2
How many environmental management indicators do you identify?	115	0	4.5	1.6	1.4
Processes	115	0.5	4.8	1.9	1.0

Table 8. Processes – descriptive statistics of indicators and dimensions

The frequency of environmental management monitoring depends on the type of activity and consequently the type of environmental impacts, geographical location of an enterprise, requirements of the relevant environmental legislation and the size of an enterprise. Time schedule alone, without identifying the previously listed facts, does not yield a realistic result. The type and consequently the number of indicators both depend on the type of activity, therefore, the indicators for production activities, as a rule, substantially differ from those for service activities. A simplified implementation of the number of indicators distorts the actual management of environmental impacts functioning of processes. Therefore, a further study of environmental management is indispensable. .

The average value of the indicator *Leadership in terms of environmental managemen*t is statistically significant, at a confidence level not exceeding 99 %, which is higher than the average value of the indicator *Processes in the area of environmental management*.

From the research results, we can conclude that:

At a declarative level, environmental care is reflected in leadership and policy, strategy and organizational culture in the area of environmental management, whereas the actual care is implemented in the processes related to this area. By using pair t-test we can check if the average value of the indicator *Processes in the area of environmental management* is statistically significantly lower than the average value of indicator *Leadership in terms of environmental management* , as shown in Table 9.

In the area of environmental management we suggest the following short-term and long-term measures with a view of improving operations in the studied enterprises:

- Management should incorporate environmental management in an enterprise's operations as part of current practices.
- It is necessary to establish or determine the most suitable and optimal size of particular environmental indicators and indicating devices (environmental management indicating devices) in terms of an enterprise's activity and size.

		Arithmetic mean	N	Standard deviation	t	p
Pair 1	Leadership in the area of environmental management	3.33	113	0.98	15.498	0
	Processes	1.92	113	0.96		

Table 9. Descriptive statistics of the indicators

- Time schedule for monitoring environmental indicators and indicating devices (environmental management indicating devices) needs to be adapted to an enterprise's operations and size as well as to its environmental impacts, considering environmental legislation.
- It is necessary to incessantly develop suitable environmental values, knowledge and skills with all employees concerning their functions.

14. Conclusion

The content and methods of administration and leading have an essential meaning for dynamic adaptation of business systems in relation to marketing economy. From the cognition, that the innovation brings better exploitation of all potentials, also on the domain of environment protection, it results the measurement of responsible people with the administration of business systems. The whole treat of environment in the administration and leading of professional processes is inevitable condition for the preservation of natural balance in the environment. Punctual creativeness and direction are results of relationship managers have to the environment. In the words of Elkington "sustainability is the principle of ensuring that our actions today do not limit the rabge of economic, social, and environmental options open to future generations (Elkington, 1997). Companies also face judgement in the court of public opinion, where they can found guilty of selling or using products, processes, or practices that have a negative impact on the climate (Lash and Wellington, 2007). The potential benefits associated with an effective EMS include:

- assuring customers of commitment to demonstrable environmental management;
- maintaining good public/community relations;
- satisfying investor criteria and improving access to capital;
- obtaining insurance at reasonable cost;
- enhancing image and market share;
- meeting vendor certification criteria;
- improving cost control;
- reducing incidents that result in liability;
- demonstrating reasonable care;
- conserving input materials and energy;
- facilitating the attainment of permits and authorizations;

- fostering development and sharing environmental solutions;
- improving industry-government relations (ISO 14004:1996(E), 1996)

The whole treat of environment in the administration and leading of professional processes is inevitable condition for the preservation of natural balance in the environment. And finally, in the business processes innovation model, there is the knowledge of business processes managers to be used to implement business process innovation policy in the following steps: vision, mission, strategy, tactics, and management processes.

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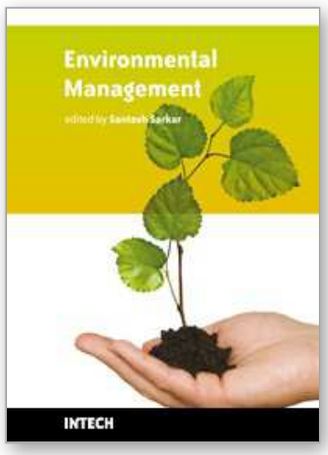
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There has been a steady increase in anthropogenic pressure over the past few years due to rapid industrialization, urbanization and population growth, causing frequent environmental hazards. Threats of global environmental change, such as climate change and sea level rise, will exacerbate such problems. Therefore, appropriate policies and measures are needed for management to address both local and global trends. The book 'Environmental Management' provides a comprehensive and authoritative account of sustainable environmental management of diverse ecotypes, from tropical to temperate. A variety of regional environmental issues with the respective remedial measures has been precisely illustrated. The book provides an excellent text which offers a versatile and in-depth account of management of wide perspectives, e.g. waste management, lake, coastal and water management, high mountain ecosystem as well as viticulture management. We hope that this publication will be a reference document to serve the needs of researchers of various disciplines, policy makers, planners and administrators as well as stakeholders to formulate strategies for sustainable management of emerging environmental issues.

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51000 Rijeka, Croatia
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中国上海市延安西路65号上海国际贵都大饭店办公楼405单元
Phone: +86-21-62489820
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