

# ROLE OF SUSTAINABILITY MANAGEMENT IN ENVIRONMENT

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**Abstract:** The paper shows that environment is one of the basic public assets of a human system, and it must be therefore specially protected. According to our present knowledge, the sustainability is necessary for all human systems and it is necessary to invoke the sustainable development principles in all human system assets. Sustainable development is understood as a development that does not erode ecological, social or politic systems on which it depends, but it explicitly approves ecological limitation under the economic activity frame and it has full comprehension for support of human needs. The paper summarizes the conditions for sustainable development, tools, methods and techniques to solve the environmental problems and the tasks of executive governance in the environmental segment.

**Key words:** Environment. Human System. Sustainability. Sustainability Management. Methods and Tools



## Introduction

The paper summarizes the results of the systematic study of environment in the recent 10 years. It starts from cognition of the studied subject on the present level and summarizes the conditions and limits of sustainable development, as well as the tools, methods and techniques used to solve the environment problems and tasks of executive governance in the environmental segment. The environment itself is a system of systems that, from the viewpoint of human existence and development, is a part of the superior system of systems, the human system. From the given fact that it is evidently impossible to elevate the environment existence and return to original state under the interests connected with human existence and development, but, simultaneously, it is impossible to damage the environment irresponsibly, because it creates the medium necessary for human existence itself. Therefore, we have to introduce the compromises that respect human needs and environment into the practice, based on our knowledge and experience. Their impact and benefits are monitored in the way that allows carrying out the corrective measures if they seem to be necessary.

Based on recent cognition, sustainability is not only related to the environment, but also to the entire human system and its basic assets/public assets on which the human lives are dependent. Basic human system assets are human lives, health and security; environment; property and public welfare; infrastructures and technologies, in particular those that belong to the critical ones. The sustainability

assessment in general sense is the formalized process for identification, prediction and assessment of potential impact of arbitrary inputs including the variants for society sustainable development (e.g. legal rules, ordinances, regulations, political intent, plan, program, and project). From the viewpoint of present cognition of human system and its assets, the mentioned assessment might be performed always at good governance of territory.

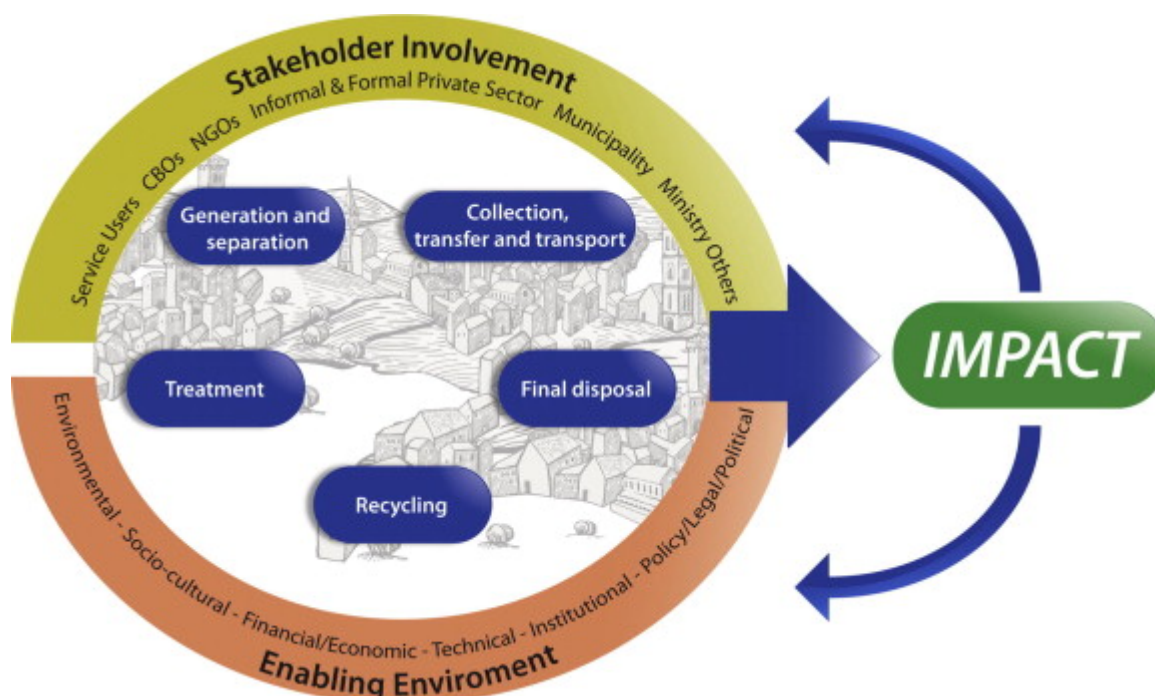


Fig. 1.  
The Integrated Sustainable waste management model (WASTE, 2004;  
adapted from ISSOWAMA Consortium, 2009)

### Conditions for Sustainable Development

From the system viewpoint, the sustainable system has attributes as productivity, resilience, adaptability and vulnerability, and therefore, sometimes it is not easy to find a suitable reference state or conditions:

- The reference point of sustainability is a demanded future state (scenarios, techniques and foresight).
- The reference points are, on the one hand, inputs and, on the other hand, outputs of system processes (ecological trace, product life times etc.).

We can thus assume the context given in Figure 1. Since these attributes are mutually tied up, in the relation to the existence of system, the sustainability is on the peak. The decision making on system adaptive capacity is defined by the relation given in the decision matrix in table 1

Sustainability is often misinterpreted as the goal that we all strive for. In fact, sustainability is not an achievable final state, since it is rather the basic characteristics of a dynamically developed system. Thus; sustainability is permanent adaptation to changing conditions. This adaptive property is natural to all ecosystems. It is only a question of education to introduce the adaptive procedures to the public administration decision-making on human, i.e. socio-ecologic-technical system. For the implementation in practice it holds several pieces of knowledge:

- **Sustainability Vulnerability Elasticity**
- **Assessment of System type**
- **Hazard and Topical**
- **Impacts conditions**
- **Limitable values**
- **Indicators of stress**
- **Limitable values**
- **Indicators of state**
- **Impacts Adaptive capacity**
- **Low High**
- **High Vulnerability Chance of development**
- **Low Rest risks Sustainability**

1. Criticality is directed to failures and hazards, while sustainability deals with the existence. Therefore, more and more important are the approaches and procedures that deal with the sustainable infrastructure, namely both, the grey one and the green one. The procedure for searching the sustainable elements is the following:

- List of activities,
- Key impacts induced by human activities,
- Identification of receptors,
- Identification of ways of impacts spread,
- Identification of the secondary and further order impacts on main and other receptors.

This approach can be used only for grey (i.e. by human created) infrastructure, whereas the green infrastructure cannot be investigated in the way that its parts are separately analyzed, since landscape and ecosystems create a complex super system, i.e. system of systems.

2. The landscape sustainability is also connected with its sensitivity; the assessment is done by scoring, i.e. decision matrix in Table 1.

3. The human needs, however, depend mostly on functions of ecosystems, and therefore, it is necessary to understand the ecosystem functions, because:

The ecosystem functions vary and thus influence the human health, Responses of ecosystems to human activity (intended or non-intended) are not always immediate, they can cumulate, affect vicariously or retrospectively, and through the retrogressive links to create emergency up to critical situations.

Therefore, the procedure in which we define firstly the grey/engineering infrastructure for human settlements and, after that, the proposal is transformed into the landscape is incorrect as it completely ignores possible cumulative, long term and delayed impacts on environment sources and ecosystems services. Therefore, it is necessary to search for the solution suitable for local conditions; i.e. it is site specifications.

4. The orientation to the interface of grey and green infrastructures relays on technologies that might solve present and future problems. New technologies, however, bring in uncertainty and vagueness into green infrastructure, because the technology impacts on environment are hard to forecast. Therefore, it is necessary to use and process the methodology of foresight not only on technological level, but also on societal level, i.e. societal foresight aimed at the trends of behavior of grey infrastructure (i.e. theory of normal accident, highly reliable organization, industrial ecology) and green infrastructure (adaptive environmental management, industrial ecology etc.).

**Table1**

## Characterization of Waste Management Practices

Description	Answers	
Date		
Country of investigation		
Perinatal mortality		
Adult mortality		
Life expectancy at birth		
Healthy life expectancy at birth		
Gross Domestic Product/capita		
Ecological footprint/capita		
CO <sub>2</sub> -emission/capita		
Persons/km <sup>2</sup>		
% urban population		
Province of investigation		
City, town, village of investigation		
The total number of persons inhabiting the city		
Full name of person giving the information or number of		

Description	Answers
participants	
Solid waste management stakeholders present in the city	
Type of waste brought to the community official disposal site	1 = Household; 2 = institutional; 3 = construction; 4 = health care; 5 = agriculture; 6 = industry; 7 = commercial
Community urban or rural	
Waste generation index (kg/capita/day) city/country	
Budget of municipality for waste management services per year	
Extend of waste separation at the house level	1 = None; 2 = some; 3 = half; 4 = most; 5 = all
Extend of waste separation at the business level	1 = None; 2 = some; 3 = half; 4=most; 5 = all
Extend of plastic waste separation at the municipality level	1 = None; 2 = some; 3 = half; 4 = most; 5 = all
Extend of paper waste separation at the municipality level	1 = None; 2 = some; 3 = half; 4 = most; 5 = all
Extend of metal waste separation at the municipality level	1 = None; 2 = some; 3 = half; 4 = most; 5 = all
Extend of glass waste separation at the municipality level	1 = None; 2 = some; 3 = half; 4 = most; 5 = all
Extend of organic waste separation at the municipality level	1 = None; 2 = some; 3 = half; 4 = most; 5 = all
Extend of battery separation at the municipality level	1 = None; 2 = some; 3 = half; 4 = most; 5 = all
Extend of medical waste separation at the healthcare centers	1 = None; 2 = some; 3 = half; 4 = most; 5 = all
Extend of electric and electronic waste separation at the municipality level	1 = None; 2 = some; 3 = half; 4 = most; 5 = all
Extend of waste dispersed in the city	1 = None; 2 = some; 3 = half; 4 = most; 5 = all
The collection of waste is done by: (you can write more than one)	1 = Municipality; 2 = private sector; 3 = waste pickers; 4 = children; 5 = public private partnership; 6 = transfer point (station); 7 = other
Frequency of waste collection at commercial sites (times/ week)	
Frequency of waste collection at inner city (times/ week)	
Frequency of waste collection at rural areas (times/ week)	

Description	Answers
Type of vehicle(s) used to collect the waste (you can write more than one)	1 = Rickshaw; 2 = wheelbarrow; 3 = truck; 4 = tractor; 5 = compactor; 6 = animal; 7 = tricycle; 8 = motorcycle; 9 = handtrolley; 10 = other
Price or fee for the collection service (write it in your own currency) (year)	

Collection time fitting users' needs	1 = Never; 2 = sometimes; 3 = often; 4 = very often; 5 = always
Waste transfer station(s) in the city	1 = Yes; 2 = no
Streets used as transfer stations	1 = Yes; 2 = no
Schedule for waste collection at transfer station(s) accomplished	1 = Never; 2 = sometimes; 3 = often; 4 = very often; 5 = always
Hazardous waste placed on the streets	1 = Never; 2 = sometimes; 3 = often; 4 = very often; 5 = Always
Waste littering the road while transported	1 = Never; 2 = sometimes; 3 = often; 4 = very often; 5 = always
Waste treated before disposal	1 = Never; 2 = sometimes; 3 = often; 4 = very often; 5 = always
Hazardous waste being treated	1 = Never; 2 = sometimes; 3 = often; 4 = very often; 5 = always
Presence of illegal dumping sites in the city	1 = Yes; 2 = no
Presence of official disposal site	1 = Yes; 2 = no
Presence of well engineered disposal site	1 = Yes; 2 = no
Performance of landfill	1 = Very bad; 2 = bad; 3 = good; 4 = very good; 5 = excellent 6 = NA
Distance to the disposal site (km)	
Waste at the illegal disposal site(s) covered	1 = Never; 2 = sometimes; 3 = often; 4 = very often; 5 = always
Waste covered at formal disposal site	1 = Never; 2 = sometimes; 3 = often; 4 = very often; 5 = always
Control of healthcare waste treatment and disposal	1 = Never; 2 = sometimes; 3 = often; 4 = very Often; 5 = always
Level of composting done by households, private sector or municipality	1 = None; 2 = some; 3 = half; 4 = most; 5 = all
Compost produced by municipality	1 = Yes; 2 = no
Quality of compost controlled	1 = Yes; 2 = no
Market for compost	1 = Yes; 2 = no
Practice of biogas production with HH waste	1 = Yes; 2 = no
Level of domestic burning of waste at household level	1 = None; 2 = some; 3 = half; 4 = most; 5 = all
Practice to use reusable shopping bags	1 = Never; 2 = sometimes; 3 = often; 4 = very often; 5 = always
Restaurant waste used to feed animals	1 = Never; 2 = sometimes; 3 = often; 4 = very often; 5 = always
Paper reused within the municipality	1 = Never; 2 = sometimes; 3 = often; 4 = very often; 5 = always



Glass bottles reused within the municipality	1 = Never; 2 = sometimes; 3 = often; 4 = very often; 5 = always
Metal scrap used in the municipality	1 = Never; 2 = sometimes; 3 = often; 4 = very often; 5 = always
Recyclables goods collected by waste pickers	1 = Never; 2 = sometimes; 3 = often; 4 = very often; 5 = always
Waste pickers pay a fee for the recyclables they collect	1 = Never; 2 = sometimes; 3 = often; 4 = very often; 5 = always
Waste pickers criminalized	1 = Never; 2 = sometimes; 3 = often; 4 = very often; 5 = always
Recyclables goods buying companies in the surroundings of the city	1 = None; 2 = few; 3 = some; 4 = many; 5 = very many
Recycling companies in the surroundings of the city	1 = None; 2 = few; 3 = some; 4 = many; 5 = very many
Presence of waste reduction strategies in the city	1 = Yes; 2 = no
NGOs responsible for waste reduction campaigns	1 = Never; 2 = sometimes; 3 = often; 4 = very often; 5 = always
Reduction campaigns performed at schools	1 = Never; 2 = sometimes; 3 = often; 4 = very often; 5 = always
Recycling awareness campaigns supported by municipality	1 = Never; 2 = sometimes; 3 = often; 4 = very often; 5 = always
Municipality's authorities knowledge on the city waste situation	1 = None; 2 = very little; 3 = little; 4 = sufficient; 5 = extensive
Municipality has a swm plan	1 = Yes; 2 = no
Municipality has standards for the swm system	1 = Yes; 2 = no
swm standards monitored	1 = Yes; 2 = no 3 = NA
Structured collection system for sw available in the community	1 = Yes; 2 = no
Efficiency of the sw collection system (in terms of what is offered by the provider and what the users receive)	1 = Very bad; 2 = bad; 3 = good; 4 = very good; 5 = excellent
Available transportation facilities for sw collection	1 = None; 2 = very little; 3 = little; 4 = sufficient; 5 = extensive
Amount of equipment available to manage sw	1 = None; 2 = very little; 3 = little; 4 = sufficient; 5 = extensive
Suitability of the infrastructure to manage sw	1 = Very bad; 2 = bad; 3 = good; 4 = very good; 5 = excellent
Quality of the road(s) for sw collection	1 = Very bad; 2 = bad; 3 = good; 4 = very good; 5 = excellent
Waste considered by the municipality authorities as a resource	1 = Yes; 2 = no
Knowledge of municipal workers on technologies for swm	1 = Very bad; 2 = bad; 3 = good; 4 = very good; 5 = Excellent
Knowledge of municipal workers on good practices for swm	1 = Very bad; 2 = bad; 3 = good; 4 = very good; 5 = excellent
Citizens participating in the decision making processes for swm	1 = None; 2 = some; 3 = half; 4 = most; 5 = all
Municipal authorities perceived high cost for alternative technologies for swm	1 = None; 2 = some; 3 = half; 4 = most; 5 = all

Local available low cost technologies for swm	1 = None; 2 = very few; 3 = few; 4 = sufficient; 5 = extensive
Local available professionals in the field of swm working for the municipality	1 = None; 2 = very few; 3 = few; 4 = sufficient; 5 = extensive
Municipality has skilled personnel	1 = Never; 2 = sometimes; 3 = often; 4 = very often; 5 = always
Presence of health campaigns in the community	1 = Never; 2 = sometimes; 3 = often; 4 = very often; 5 = always
Presence of environmental awareness campaigns in the city	1 = Never; 2 = sometimes; 3 = often; 4 = very often; 5 = always
Solid waste service provided for free	1 = Yes; 2 = no
Cost recovery for sw services	1 = None; 2 = some; 3 = half; 4 = most; 5 = all
Community willing to pay for waste collection	1 = None; 2 = some; 3 = half; 4 = most; 5 = all
Options for implementation of fees according to income of waste generators	1 = Yes; 2 = no
Available costing system in the municipality	1 = Yes; 2 = no
Limited financial resources at the municipal departments	1 = Never; 2 = sometimes; 3 = often; 4 = very often; 5 = always
Dependency on finances coming from development cooperation	1 = None; 2 = some; 3 = half; 4 = most; 5 = all
National governmental financial support to the municipality	1 = Never; 2 = sometimes; 3 = often; 4 = very often; 5 = always
National governmental supporting other issues different from finances	1 = Never; 2 = sometimes; 3 = often; 4 = very often; 5 = always
Presence of economic instruments (fees, subsidies, taxes)	
Private sector providing waste collection	1 = Yes; 2 = no
Private sector participating in swm services different than collection	1 = Yes; 2 = no
Public awareness campaigns available for wm in the community	1 = Never; 2 = sometimes; 3 = often; 4 = very often; 5 = Always
Stakeholders willing to participate in the wm solutions	1 = none; 2 = some; 3 = half; 4 = most; 5 = all
Collaboration among stakeholders	1 = Very bad; 2 = bad; 3 = good; 4 = very good; 5 = excellent
Presence in the community of active public platforms	1 = None; 2 = few; 3 = some; 4 = many; 5 = very many
Municipal leaders interest in environmental issues	1 = None; 2 = few; 3 = some; 4 = many; 5 = very many
Inconsistencies between different governmental agencies for wm	1 = None; 2 = few; 3 = some; 4 = many; 5 = very many
Your perception of the organization of the municipality	1 = Very bad; 2 = bad; 3 = good; 4 = very good; 5 = excellent
Municipal workers willingness to change their ways of working	1 = None; 2 = few; 3 = some; 4 = many; 5 = very many
Municipal authorities have priorities for other urgent topics than swm	1 = Never; 2 = sometimes; 3 = often; 4 = very often; 5 = always



Level of interest of political authorities in wm issues	1 = Very bad; 2 = bad; 3 = good; 4 = very good; 5 = excellent
Level of motivation of the municipal workers	1 = Very bad; 2 = bad; 3 = good; 4 = very good; 5 = excellent
Level of corruption within municipality	1 = None; 2 = low; 3 = average; 4 = high; 5 = very high
Level of coordination and cooperation between service users and service providers	1 = Very bad; 2 = bad; 3 = good; 4 = very good; 5 = excellent
Extend to which goals and objectives of service users and service providers are shared	1 = None; 2 = some; 3 = half; 4 = most; 5 = all
Adequacy of policy and legal frameworks to manage sw	1 = Very bad; 2 = bad; 3 = good; 4 = very good; 5 = excellent
Environmental legislation in place	1 = Yes; 2 = no
Practice of law enforcement	1 = Very bad; 2 = bad; 3 = good; 4 = very good; 5 = excellent
Clear implementation of the countries' laws by the municipality	1 = Very bad; 2 = bad; 3 = good; 4 = very good; 5 = excellent

## Review of Literature

Past research has identified the stakeholders or people or organizations that may have an interest in adequate waste management. The stakeholders reported are: national and local government (Shekdar, 2009); municipal authorities; city corporations; non-governmental organizations (NGO's); households (Sujauddin et al., 2008); private contractors; Ministries of Health; Environment, Economy and Finance (Geng et al., 2009) and recycling companies (Tai et al., 2011).

Some scholars have identified factors influencing the elements of the waste management systems. According to Sujauddin et al. (2008) the generation of waste is influenced by family size, their education level and the monthly income. Households attitudes related to separation of waste are affected by the active support and investment of a real estate company, community residential committees' involvement for public participation (Zhuang et al., 2008) and fee for collection service based on the waste volume or weight (Scheinberg, 2011). Gender, peer influence, land size, location of household and membership of environmental organization explain household waste utilization and separation behavior (Ekere et al., 2009).

It has been reported that collection, transfer and transport practices are affected by improper bin collection systems, poor route planning, lack of information about collection schedule (Hazra and Goel, 2009), insufficient infrastructure (Moghadam et al., 2009), poor roads and number of vehicles for waste collection (Henry et al., 2006). Organizing the informal sector and promoting micro-enterprises were

mentioned by Sharholy et al. (2008) as effective ways of extending affordable waste collection services.

Lack of knowledge of treatment systems by authorities is reported as one factor affecting the treatment of waste (Chung and Lo, 2008).

Tadesse et al. (2008) analyzed the factors that influence household waste disposal decision making. Results showed that the supply of waste facilities significantly affects waste disposal choice. Inadequate supply of waste containers and longer distance to these containers increase the probability of waste dumping in open areas and roadsides relative to the use of communal containers. Insufficient financial resources limiting the safe disposal of waste in well equipped and engineered landfills and absence of legislation are mentioned by Pokhrel and Viraraghavan (2005).

In relation to the pricing for disposal Scheinberg (2011), analyzing the data from "Solid Waste Management in the World's Cities" (Scheinberg et al., 2010), notes that there are indications that high rates of recovery are associated with tipping fees at the disposal site. High disposal pricing has the effect of more recovery of waste generated, that goes to the value chains or beneficial reuse of waste.

In relation to recycling Gonzalez-Torre and Adenso-Diaz (2005) reported that social influences, altruistic and regulatory factors are some of the reasons why certain communities develop strong recycling habits. The authors also showed that people who frequently go to the bins to dispose of general refuse are more likely to recycle some product at home, and in most cases, as the distance to the recycling bins decreases, the number of fractions that citizens separate and collect at home increases. Minghua et al. (2009) stated that in order to increase recycling rates, the government should encourage markets for recycled materials and increasing professionalism in recycling companies. Other factors mentioned by other scholars are financial support for recycling projects and infrastructures (Nissim et al., 2005), recycling companies in the country (Henry et al., 2006), drop-off and buy back centers (Matete and Trois, 2008) and organization of the informal sector (Sharholy et al., 2008).

Waste management is also affected by the aspects or enabling factors that facilitate the performance of the system. They are: technical, environmental, financial, socio-cultural, institutional and legal.

Literature suggests that technical factors influencing the system are related to lack of technical skills among personnel within municipalities and government authorities (Hazra and Goel, 2009), deficient infrastructure (Moghadam et al., 2009), poor roads and vehicles (Henry et al., 2006), insufficient technologies and reliable data (Mrayyan and Hamdi, 2006).

Matete and Trois, 2008 and Asase et al., 2009 respectively suggested that the factors affecting the environmental aspect of solid waste management in developing countries are the lack of environmental control systems and evaluation of the real impacts. Ekere et al. (2009) proposed that the involvement of the population in active environmental organizations is necessary to have better systems.

Municipalities have failed to manage solid waste due to financial factors. The huge expenditure needed to provide the service (Sharholy et al., 2007), the absence of financial support, limited resources, the unwillingness of the users to pay for the service (Sujauddin et al., 2008) and lack of proper use of economic instruments have hampered the delivery of proper waste management services. Sharholy et al. (2008) indicated that the involvement of the private sector is a factor that could improve the efficiency of the system.

It is generally regarded that waste management is the sole duty and responsibility of local authorities, and that the public is not expected to contribute (Vidanaarachchi et al., 2006). The operational efficiency of solid waste management depends upon the active participation of both the municipal agency and the citizens, therefore, socio cultural aspects mentioned by some scholars include people participating in decision making (Sharholy et al., 2008), community awareness and societal apathy for contributing in solutions (Moghadam et al., 2009).

Management deficiencies are often observed in the municipalities. Some researchers that have investigated the institutional factors that affect the system have come to the conclusion that local waste management authorities have a lack of organizational capacities (leadership) and professional knowledge. Besides they concluded that the information available is very scanty from the public domain (Chung and Lo, 2008). The extremely limited information is not complete or is scattered around various agencies concerned, therefore, it is extremely difficult to gain an insight into the complex problem of municipal solid waste management (Seng et al., 2010).

Waste workers are associated to low social status (Vidanaarachchi et al., 2006) situation that gives as a result low motivation among the solid waste employees. Politicians give low priority to solid waste compared to other municipal activities (Moghadam et al., 2009) with the end result of limited trained and skilled personnel in the municipalities (Sharholy et al., 2008). Positive factors mentioned that improve the system are support from municipal authorities (Zurbrügg et al., 2005) and strategic plans for waste management that allows monitoring and evaluating annually the system (Asase et al., 2009).

Researchers have documented how an adequate legal framework contributes positively to the development of the integrated waste management system (Asase

et al., 2009) while the absence of satisfactory policies (Mrayyan and Hamdi, 2006) and weak regulations (Seng et al., 2010) are detrimental to it.

### **Tools, methods and techniques for solutions to environmental problems**

The humans did not come in the environment with intent to subvert the nature. The problems started at the time when humans tried to separate themselves from the nature, and they placed technology / engineering between themselves and the nature. Initially, it was not evident, the biosphere has kept its reserves and it contrived to equilibrate with a range of activities. However, the human activity has been progressively taking on the intensity and in some directions the biosphere has been globally affected. The present worldwide problems are of a global character. Apart from the environment contamination, other major global problems involve the questions of peace and war, the differences between developed and developing countries, providing the food for future population, energy demand, lack of water, soil, sources, as well as the questions of healthcare, culture and education.

Therefore, it is necessary to introduce Strategic, System and Proactive Management is based on a realistic, systematic and proactive view of human system and its problems. The given view is necessary from the following reasons:

- Humans have been getting to a certain life standard that they do not repudiate; this standard is conditioned by interventions to nature.
- The environment is an adaptable system. During their development, the humans have accumulated much knowledge and experience, and therefore, they are supposed to know the ways to limit the interventions to a system, so that to ensure the system development in the direction supporting the mankind's development.
- For many humans, the environment today represents a stylish stalking horse which makes them take up the actions that have nothing in common with real environment (e.g. the reality that the soil is left unexploited does not prosper to environment).

For decision-making, a model of environment that is restricted to human medium has been used, because the aim of human strive is to ensure the human society development, i.e. by recent words said such development trajectory of whole environment system that onward enables humankind development. Based on the present knowledge each quality management, including environmental management, must carry out the decision-making process with respect to the following goals: To prevent emergency situations and to localize emergency situations (the accidents can origin in the frame of both, individual components or even in the frame of the whole environment system).

To ensure the healthy development of human society.

To implement ecological programmes in the socio-economic sphere.

The management must monitor: Impacts of anthropogenic activities into the environment that can be divided into: Pollution of environment component (may

be either of the material character, manifested by concentrations of agents or of physical origin manifested by noise, heat, electromagnetic oscillation etc., Biological diversity, i.e. reduction of number of species, change of species composition etc. Deterioration of health state of human population, Pressure of antropogenic sphere on environment that is divided to: emissions of agents (or better wastes of human activities) into natural medium, consumption of renewable sources.

### **Administration Management and its tasks on Environment Sector**

Since its origin, the basic function of state has been to ensure the protection and development of a given human society which is impossible without ensuring the safe space in that the human society has been living. The management of state includes generally the concepts of government, control and office hearing of the public affairs. It represents the conscious activity that is directed to the determination and control of course of topical processes for achievement of appointed goals. It puts individual activities in harmony and it fulfils general functions of the whole, i.e. the state / territory / object / organization etc. The governance is the form of activity of authorities, particularly executive ones that consists in organizing and practical implementation of tasks given by managing team / state management/ territory / object / organization in harmony with laws and the other legal rules.

According to the basic tools of state for management directed to sustainability are:

- Management (strategic, tactical, and operational) based on qualified data, knowledge, Professional assessments, qualified decision-making methods, land-use planning, correct sitting, designing, building, operation, maintenance, reparation and renovation of buildings, technologies and infrastructures,
- Citizen's education, schooling and training,
- Specific education of technical and management workers, technical, health, ecological, cyber and other standards, norms and rules including the best practice procedures, i.e. tools for control/regulation of processes that may or might lead to disaster occurrence or to the increase of its impact.
- Inspections and audits,
- Executive security forces for qualified response to emergency and critical situations,
- Systems for critical situations defeating,
- Security (land-use and spatial), emergency, continuity, crisis and contingency planning,
- Specific system for defeating the critical situations - safety, emergency, continuity and crisis management.

The analysis of the development of environment and the development of political, social and economic situation worldwide shows that it is necessary to solve the



cases and actions that by their intensity induce the critical situations leading to relevant crises of the type denoted as a humanitarian catastrophe or social crisis. Therefore, from the viewpoint of human security, human system development, conservation of quality environment, existence, stability and development of state must comprise a safety concept connected with the concepts of development codified and implemented by safety management. The basic (usual) level of management, the target is security and sustainable development, thus connecting emergency and crisis management.

The goal of human society management is to ensure the protection of: human lives, health and security; property, welfare; environment; infrastructures and technologies, which are inevitable for human survival, i.e. the mobilization and co-ordination of utilization of national sources (energy, labor force, production capability, food and agriculture, resources, telecommunications etc.), the co-ordination of such activities as they are notification system, rescue system and medical services that reduce impacts of natural or other disasters and ensures the continuity of activity of public administration, the adherence of legislation and also generate the conditions for start of development.

The land and regional development is manifested by the construction of industrial regions coming closer and closer to the residential zones. Possibility of harm thus increases, and society/community) is not willing to accept all risks. This is the reason for the necessity of risk management and consecutively risk engineering that includes risk assessment, risk reduction and harms explanation. In short, the risk engineering is connected with technical systems (only in advanced forms, the human factor influence on complex process safety is considered) and in the broader sense, it is possible to generalize it to renewal of landscape with utilization of engineering approaches. Therefore, the risk engineering plays such an important role. Its target, on the one hand, is the optimum protection of humans, property and environment, and, on the other hand, the optimum renewal of damaged landscape with utilization of engineering procedures and findings. Both concepts require structured a system approach and qualified utilization of planning the scenarios for decision-making support.

The territory management understood as strategic and proactive territory safety management differs from normal environment management in the following items:

- It is directed to the long-term sustainability.
- The aim is the system integrity (including the so called ecological integrity) because ecosystem services/utilities (i.e. utilities that environment offers to humans) promotes live supporting functions.
- It considers the human as an element of system and it integrates human activity with environment protection.
- It sentient reacts to human needs in the system contexts.

It includes quality environment management.

## Conclusion

From the viewpoint of society needs, it is necessary to ensure the further development of economy on the one hand and, on the other hand, to reduce the environment contamination and to ensure the environment protection.

The artistic creation is the high degree of proficiency. The complex problems of the human/nature relation are based on certain philosophical foundations in each historical era. The present period can be characterized as the era in which the humans incessantly start turning the higher merry-go-round of substances and energies in order to satisfy their needs, with reality that the bulk of these substances are growing much faster than the human needs. On one side it displays deficiencies of resources and energy (resource stocks have been stretched) and on the other side it wastes with resources and with energy. Sustainability considers the nature and human from the viewpoint of optimum development of the whole biosphere. The ecological behaviour should not be reduced to the mutinous discussions around the nuclear power plants and water structures or industrial complexes. We must plan and build big structures but at the same time, we must consider the impacts of these constructions on the environment and human health.

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