MODELOWANIE GOSPODARKI ODPADAMI NA TERENACH PRZYRODNICZO CENNYCH – WSTĘPNA CHARAKTERYSTYKA

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Resumé

Według ustawy z dnia 16 kwietnia 2004 r. ochrona przyrody to dbałość o zrównoważone użytkowanie zasobami i składnikami przyrody. Jej celem jest podtrzymanie istnienia gatunków roślin i zwierząt wraz z ich siedliskami, przez ich utrzymywanie lub przywracanie do stanu właściwego. Dla zrealizowania tych celów obejmuje się owe zasoby i składniki przyrody formami ochrony przyrody i prowadzi się badania naukowe związane z ich ochroną. Nasz kraj jest narażony na degradację i dewastację środowiska przez zwiększającą się liczbę odpadów. Zagrożenia nasilają się z dnia na dzień wraz ze wzrostem liczby ludności, urbanizacją i rozwojem przemysłu. Przedmiotem niniejszego artykułu jest krótka charakterystyka ochrony terenów przyrodniczo cennych przed wszechobecnymi problemami związanym z gospodarka odpadami.

Klíčová slova: tereny przyrodniczo cenne, gospodarka odpadami, modele ograniczenia zagrożeń.

MODELING OF UTILITIES ECONOMY ON THE NATURE PRECIOUS AREAS – THE INSIGHT CHARACTERISTICS

Abstract

Due to the act from 16 April 2004 the protection of nature means taking care of a balanced usage of nature resources. Its' aim is sustaining the existence of plant and animals species together with their habitations, through remaining and restoring them to the proper condition. For realisation of those aims we protect the recourses and elements of nature and the scientific research is conducted connected with their' protection. Our country is exposed to degradation and devastation of environment through the increasing number of utilities. The dangers are increasing from day to day with the increase of the number of population and development of industry. The subject of this particular article is the short characteristics of the protection of precious nature areas against the problems connected with utilities economy.

Key words: Precious nature areas, utilities economy, models of limiting the dangers.

1 Introduction

The landscape is a synthesis of natural environment, cultural and visual and each feature demands a separate treatment in its creation and protection. The protection itself demands the knowledge of basic ecological rules and also the rules of functioning of ecosystems [7].

The term of precious nature area appears quite often in the literature devoted to the problems of protection of environment, however its' significance is not clearly stated. In the most general meaning those are the areas that are characterised by the high

significance controlled by various resources, elements and values of animated and not animated nature.

The protected area means geographically isolated area, which is protected and specially managed in order to protect it against dangers. It is created usually in the areas with a variety of landscape or nature values and is legally protected. One of the main tasks of the protected areas is the protection of nature resources against degradation and improper usage, as well as creating proper conditions for the development of certain species of animals and plants and their habitats [3].

In definitions of the precious nature area we pay attention to the fact that those areas deserve a protection, which should constitute not only preserving actions on a given area but also active protection against negative influences from the outside. The precious nature area should cover the area with a big nature variety together with the surrounding buffer zone (so called "otulina") [6].

The precious nature areas are: national parks, landscape parks, the areas of a protected landscape, nature reserve, nature monuments and areas Nature 2000.

Our main duty should be the protection of natural resources, meaning the most precious national property being at the same time a part of the European continent and the world's property. The precious nature areas have several functions from the moment they are created. First of all they should protect the nature, conduct the scientific research and popularisation of the knowledge about the protection of nature and let the tourists explore the area. They should also protect the cultural heritage of the regions in the country. But nowadays, each park has the same problem – rubbish.

The development of different branches of technique and economy initiated in 19 and 20 century – introduction of more and more modern technologies and products – led to overloading of natural environment. In order to cover the consumption needs of men the world was turned to the immense factory. As a result, apart from introducing useful products to the natural environment, there was the by product- utilities.

Production of utilities is becoming the more serious problem of the country and the whole world. The main causes of this are: the growing number of population, the increasing number of consumption properties and technological progress. The intense progress of different forms of technology and economy, introduction of new technologies led to overloading of the natural environment. In order to cover all the needs of a man, the surrounding us environment was turned into a huge work factory. This caused the introduction of the great amount of by products called utilities [5].

2 The utilities and bringing them into cultivation

The utilities are all the permanent substances, also those that are not sewage, liquids that were created as a result of functioning of economy, industry or human's activity and are not useful in the place and time they were created [8].

Photo 1: *The utilities in Tatra National Park [1].*

The managing of utilities also commune ones is very often a subject of examination as a problem in a proper protection of human's health as well as other organisms in their own natural environment. The management of utilities is based on getting rid of them, reusing them and making them not dangerous to environment any more and can be conducted by local community administration and others.

The managing of utilities is based on making them minimally dangerous to the environment and minimal their amount. In order to achieve this aim, we should use the strategy based on flexible planning, organising, motivating and controlling the utilities that are produced.

The proper dealing with utilities is controlled by specific regulations based on acts made by community administration council. The most important ones are included within the act from 13 September 1996 about maintaining the communes clean and in order , D.R. 1996, number 132, pos. 622 including changes, and in regulation from 27 April 2001 about utilities D.R.2001 number 62, pos.628 including changes.

The management of utilities has to formulate the necessary aims to achieve, and on those bases plan the future actions. The planning will require the knowledge of population of the industrial area, demographic changes in a time perspective, the increase or decrease of population, changes in existing technologies, and changes in industry. The knowledge of above information let us estimate the amount and possible stream of utilities, also how fast they are created and the choice of a proper management scenario.

Motivating to conduct such utilities management is mainly to realise the necessity of the aim of conducting this activity, the reasons for the assignments. The motivation must be mainly to society, because the key to success in managing the utilities is the consciousness of people and education in the dangers coming from the amount of toxic wastes.

The plan of managing the utilities

The management of utilities is closely connected with the plan of managing the utilities, that puts all the activities and actions that must be taken in order. The basic principles are:

- preventing the originating of utilities and limiting their amount and negative influence on environment,
- securing the regaining coexisting with the rules of environment protection,
- securing the proper rendering of utilities,
- creating programs of nature protection, the increase of ecological consciousness.

The realisation of basic rules and aims of the proper utilities management requires creating a technical infrastructure appropriate to the needs and possibilities, its' regaining and rendering.

Modelling in managing the utilities

One of the new methods of modelling in utilities management is The Life Cycle Assessment (LCA). This term was first introduced on the SETAC conference (Society of Environment Toxicology and Chemistry) in Vermont in 1990. The opinion on the cycle of life is a complex process, including the analyses of profits of investing ventures and at the same time paying attention to its' negative influence on environment. The actions that aim to estimate the amount of used materials, energy and wastes that were produced in certain processes, contributed to the development of so called input-output analyses. Other well-known opinions of this type are: ecological profile analyses, ecobilans, from cradle to grave analyses [2].

The ecological Life Cycle Assessment remains still quite a new technique of managing, especially in Poland. As one of not many tools is a basis to identification of the influence and stating the ways of improving the natural environment.

One of the main assumptions of LCA is examining the environmental aspects and potential influences in the entire life of the article, beginning from the achieving the staple through the production and usage of the articles, until they are finally stored [4].

The Life Cycle Assessment analyses facilitates the comparison of the management systems as they influence the environment, and gives the choice of the optimal solution, which will also cover the economical and social criteria.

The systems of computer aids are widely used in decisive processes, connected with designing integrated systems of utilities management.

The models of producing the wastes should include the answers for arising immediately questions:

- what is the interdependence between the elements influencing the wastes production and its' amount,
- how the problem of the production of wastes will develop in the future,
- how to make use of those elements in the prognosis .

The optimal solution for the problem of managing utilities guarantees long-term realisation programs, brought into life slowly but consequently and they should describe:

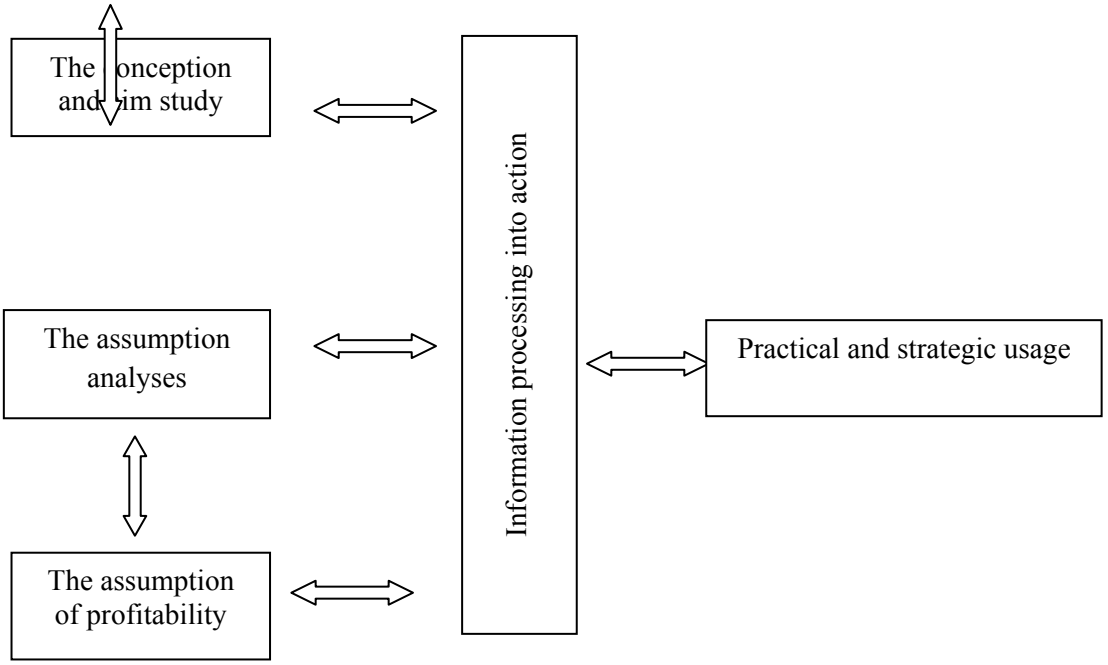
- the area with the utilities management system,
- the amount and ingredients of wastes and the prognosis of changes,
- the kind of wastes with the system of elimination and neutralization,
- the techniques of gathering, transportation and neutralization.

Generally speaking the aim is to achieve a rational managing of utilities system, including social, economical and environmental aspects. Within the system there should be possible to identify more specific aims just as satisfaction of inhabitants, the protection of environment, and the increase of utilities stream.

The model of utilities management system requires introduction of a few assumptions:

- the division of the utilities management system into subsystems, representing the included processes resulting from the methods of neutralization, meaning achieving and storage of wastes, inside and outside- object transportation, the ways of neutralization of the wastes.

- the division of the wastes into groups, resulting from their structure, morphological ingredients and chemical proprieties.
- classification of the sources of creating wastes
- criteria of profitability while choosing the optimal aspect of realisation of system economy of utilities.
- optimal localization of certain system elements, as well as the tracks of transporting the wastes.

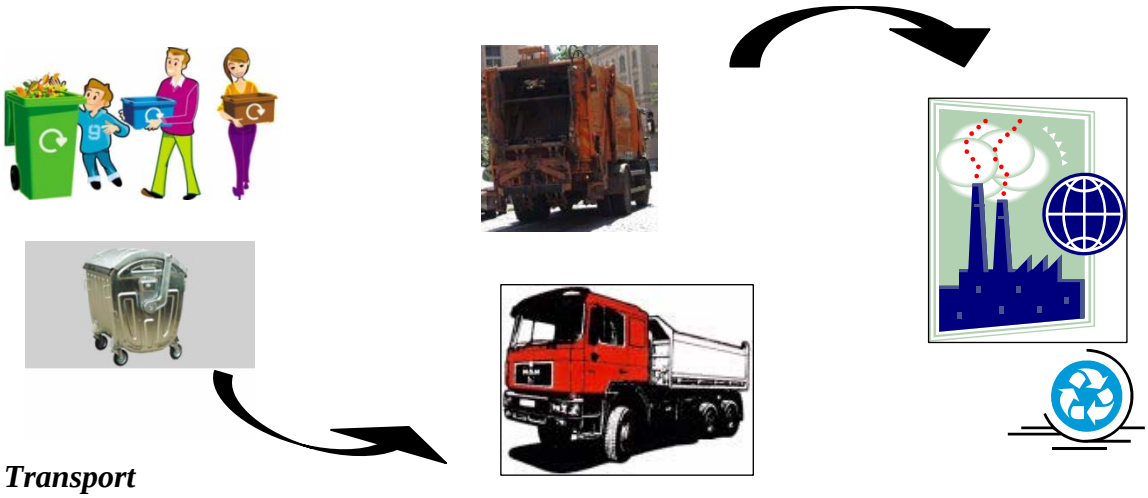


Scheme 1: *The steps of modelling using LCA [own elaboration based on literature].*

Real objects in mathematical model of system utilities economy are:
- the sources of utilities origin,
- the road system,
- means of transport,
- the objects of recycling and degradation of wastes.

The analyses of LCA start from stating of the area of examination and depicting the functional item. In case of functioning of the utilities economy all will start from the moment of placing the wastes in the rubbish bin and will finish on the storage.

Gathering the wastes storage ***Recycling and***



Transport

Picture 1: *Example steps of commune utilities economy [own elaboration].*

3 Summing up

Unfortunately the best utilities management system does not exist, but there is already the preference of recycling and regaining the chosen fractions of wastes, even by means of increasing the cost6s connected with its' recycling. The analyses made by using LCA method can be used as one of the tools supporting the process of making decisions in planning and assumption of commune utilities economy systems.

The access and the range of information, which can be analysed in LCA, is still increasing, which let the analyses be more detailed and it broadens the area to the new zones of interest .

The Life Cycle Assessment tools can be used in practise to support planning and monitoring the utilities economy system, or providing the local authorities with the proof for a new utilities economy system. Those tools do not indicate optimal solutions directly, but only the results in the form of tables, charts or data base, which gives an opportunity to compare different systems and to choose the most optimal one.

In the project we can use different models of dealing with wastes and conduct the analyses which will show what methods are the most appropriate for a given product. But what is the most important we must remember that the priorities taken should be examined from the point of view of the environment and its' protection not economical reasons.

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