

# Protection Of The Environment From The Negative Effects Of Socio Economic Systems

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## **Abstract:**

Environmental protection consists in maintaining the dynamics of environmental systems and in the reflex of events existing and shaping human society. Humans represent one of the most important elements of threat and danger to fragile ecological systems. Man's confrontation with ecosystems depends on man's behavior and needs, which in this regard are also shaped by socio-economic aspects. In natural processes, socio-economic aspects present in society can begin to slow down, stop or completely destroy these processes. There is disruption of favorable conditions for life on the planet and disruption of functional eco-systems. This work focuses on the evaluation of socio-economic aspects, as an element having an impact on the environment. The procedure is based on the model of the concentric zonal structure of the city by E.W. Burges and on the multi-core model of Harris and Ullman, from which the settings for the formation of a healthy and functional eco-environment can be derived. Thus, the sustainability of properly functioning ecosystems can be effectively planned with the help of tools - culture, economy and society. By aligning social needs with the correct setting of socio-economic aspects in a given society, it is possible to shape society's thinking related to the willingness to solve the environmental problems of its surroundings. Properly set socio-economic-cultural programs and ways of socio-economic rewards of a person, success in environmental protection can be achieved.

## **Key words:**

Socio-Economic Aspects, Environmental Protection, Environmental Assessment

# 1 Reflection of current environmental protection depending on socio-economic aspects

Environmental protection was and is a frequent topic of discussion. The given problem is increasingly being solved in other levels of social life and today it permeates practically all disciplines. Environmental protection itself consists primarily in maintaining the dynamics of environmental systems. But how to effectively perceive today's society and its individual elements that shape society so that it is realistic? Do socio-economic aspects influence the existence and dynamics of a healthy and functional environment?

Unfortunately, biological systems are quite fragile and subject to devastation as a result of the social and economic development of society. The socio-economic aspects of social systems, which represent the main risk of devastation in this regard, are often conditioned only by insufficient rationality and a lack of sensitive ecological behavior and actions of people. At the same time, border locations are the worst off. They are locations that form a transition between two different biotopes. It is primarily a transition between the peripheral zone of the city district and open nature. Here, human needs are often superior to the functionality of existing biosystems, which they subsequently exploit without a restoration program. Unfortunately, the alarming manifestations that signal a serious disturbance of the biological environment usually only come to the surface here when it is already too late. Such an open confrontation between humans and ecosystems is rarely guided by rational action. In these cases, priority is given to the profit that can be extracted from the given location in the shortest possible time. In many cases, this subsequently leads to the slowing down, stopping or complete destruction of natural processes. On the basis of individual models of the zonal structure of cities, which work with the socio-economic conditions of individual localities, it is realistic to derive effective settings aimed at creating a healthy and functional eco-system. For the purpose of this work, two different models with two different formations of zonal structures were chosen. These are the Burgess model and the Harris-Ullman model. By evaluating the socio-economic aspects of individual zone systems, settings for creating a healthy and functional eco-environment can be derived. The general effort in this case is the sustainability of properly functioning ecosystems and their protection. Through culture, economy, the setting of the functions of companies, knowledge of social needs, all of this can be effectively planned, set up and shaped the ecological harmony and mind of the society with the environmental environment in which they live. The willingness to solve the ecological problems of one's surroundings with properly set socio-economic-cultural programs and methods of socio-economic evaluation of a person leads to success in the given area, i.e. environmental protection. The non-governmental organization Rome Club, which was founded in 1968, was supposed to contribute to such a concept of understanding environmental protection and from the point of view of the overall solution of global problems.

## 1.1 Club of Rome, 1968

In 1968, the Roman Club was founded. Its goal was to address global socio-economic systems and their aspects as sources of environmental threats. The solution was defined by this group in several areas of civic life. Several socio-economic aspects shaping society were found to be the main problems and that

- the global approach of examining the growing interdependence of states is not used, in which case it will not be possible to solve it in one country within the framework of possible mutual cooperation,
- the problems of society and ecology are partially solved, and not as a whole, i.e. take into account all political-social-economic contexts including technological, environmental, psychological and cultural issues (Vystoupil, 2006)
- no scientific studies of a larger scale than the governments are able to prepare for their one election period have been prepared.

## 1.2 Areas of global problems according to the Club of Rome vs. socio-economic systems and their aspects

According to the Club of Rome, several areas of global problems have been identified in connection with the impact of socio-economic systems on the environmental environment. The given method of assessment used to identify the imminent danger depending on the socio-economic aspects based on the individual systems of companies can also be applied at the present time. With regard to the zonal structure of cities, whatever it may be (note that it is always known to us from spatial planning), and with the help of direct stimulation of these socio-economic aspects, we can thus create conditions for maintaining stable, but mainly functional environmental environments. Thanks to this, individual biotopes will cease to be devastated by socio-economic systems (see further chapter 2). Those areas of global problems that are determined by socio-economic aspects and that need to be addressed are...

Tab. n. 1: *Identification of the socio-economic systems and aspects affecting individual areas of global problems affecting the environmental environment and biotopes (note the table created on the basis of information Vystoupil, 2006)*

Global problems area	Operating socio-economic systems and aspects
<b>Environment</b>	energy problems, population explosion, poverty, backwardness of localities
<b>Demography</b>	employment, need for education and housing, availability of health care, food and water
<b>Development programs</b>	poverty, hunger, emigration, immigration, crime, drug proliferation
<b>Value system</b>	clash of civilizations, rejection of traditional values, cultures, ethical systems
<b>Governance</b>	Unemployment, environmental pollution, corruption, crime, terrorism
<b>Work</b>	automation, lack of jobs, other organization of people's lives
<b>New technology</b>	negative effects of new technologies on the organization of society and ecology, influence on political systems, value systems, people's behavior
<b>Education</b>	new priorities, the necessary implementation of permanent and lifelong education
<b>The new global society</b>	multiculturalism, multilingualism and setting in a global thinking society

<b>World economy and financial order</b>	Globalization of the economy, globalization of information, missing rules, loss of ethics, hierarchical access to global resources
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## 2 Socioeconomic systems affecting the environment in cities

Cities are characterized by their structuredness, which consists of zones with unique socio-economic characteristics and processes. These are, for example, industrial zones, residential zones, etc. The social events that exist within these individual urban zones take place within the framework of the socio-economic systems implemented here. Socio-economic systems are considered a subsystem of the environment, in which there is concentrated energy and flowing material, supporting the activities of these socio-economic systems. However, flowing material, energy together with biological and socio-economic aspects represent a burden for the environment and can be the cause of environmental problems. Humanity can influence the quality of the environment in a given area by streamlining its demands on these elements. (Bringezu et al., 2003; Schmidt-Bleek, 1993; Weizsäcker et al., 2009, Czech Statistical Office, 2023). It is also worth noting that individual aspects of systems can shape other events concerning society. These socio-economic systems and their aspects can also condition their overall course. It can be said that they determine the environment and its destiny. For the purpose of further investigation, in order to further present the significant influence of socio-economic aspects on the environment, let us start from two basic models of the zonal structure of cities, i.e.

- a) *a) Concentric zonal structure of the city according to E.W. Burgesse, 1920 (MUNI IS, 2023)*
- b) *Harris & Ullmanův a multi-core model of the zonal structure of the city (S-COOL.CO.UK, 2023)*

From these models of zonal structures of cities, it is immediately apparent where socio-economic aspects will have a far greater negative impact on the environment and where they will have a minimal impact. Thanks to this, conclusions can be drawn to assess the complex threat to the given environment or location. The given process will be useful in deciding on the appropriate documents of the dynamics of the environmental system of the given locality (zone), mainly through the help of socio-economic systems and their aspects that form them. In the following chapters, for the purpose of further research, we will get to know the above-mentioned models of zonal structures of cities in more detail. The goal will be to understand the mutual conditionality of two systems acting on each other, i.e. environmental systems and socio-economic systems representing society.

### 2.1 Concentric zonal structure of the city of Chicago according to E.W. Burgesse, 1920

In the past, the vast majority of cities were zonally formed similar to the model of the concentric zonal structure of the city according to Burgasse. Quite often it was related to the possible defense of the city. The structure of the city created in this way was quite difficult to disrupt from the outside. Another advantage of this grouping of the city was the availability of socio-economic information, things and

resources coming from the center of the given zonal structure. The energy and material flow can be predicted for this structure, which makes it possible to predict possible environmental impacts as well. In this regard, the direction of further possible spread of negative effects on the environment can also be determined. This structure, which is gradually disappearing in modern times, can still be found in older cities. Considering the central dependence of peripheral zones, this structure is very often in metropolitan cities. The practicality of such an arrangement, i.e. an arrangement of the type of concentric zonal structure of the city, is in this respect a necessity for the distribution of energetic and material flow. Such a model, to a certain extent, eliminates, for example, the distance requirement for the availability of employment locations that are concentrated in the center.

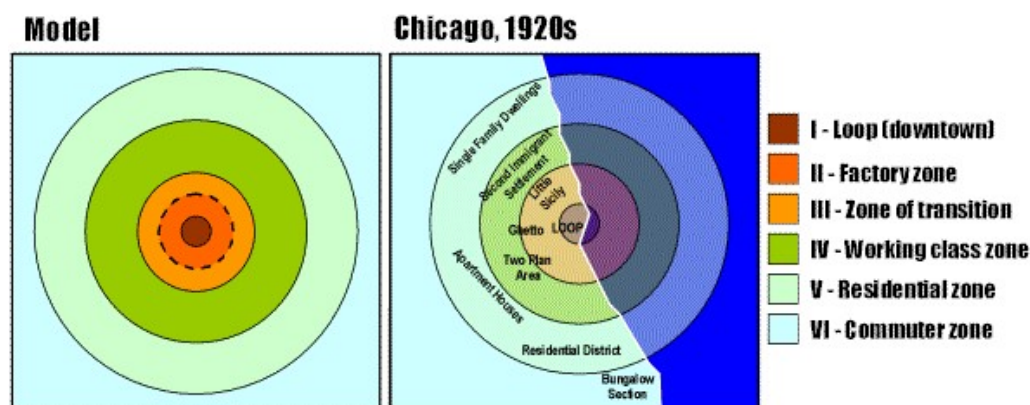


Image n. 1: General concentric zonal structure of the city (left) and concentric zonal structure of the city of Chicago (right) by E.W. Burgesse, 1920 (MUNI IS, 2023)

In the picture on the left, it is possible to see the general model of the zonal structure according to E.W. Burgesse, which is characterized, among other things, by the socio-economic systems implemented in the given zones. From the legend on the right, it is quite clear what processes will be involved and what socio-economic aspects of these systems will be implemented here. The theory is illustrated on a real model of the concentric zonal structure of the city of Chicago from 1920 (right). Here too, socio-economic aspects clearly define individual zones in terms of people's participation in social, economic and other social processes and activities.

## 2.2 Harris & Ullman a multi-core model of the zonal structure of the city

The Harris-Ullman model of the zonal structure of the city is a multi-core model. The development of technology and science within the framework of urbanization breaks down the older rules of the socio-economic organization of cities. This mainly affects large agglomerations and metropolitan cities where the suburbs have merged with the center. In this regard, decentralization will make it more difficult to determine the cause of the emergence of negative manifestations in environmental systems as a result of the action of multiple intermingling socio-economic aspects of the given systems. However, even here it will be evident where the greatest risk of possible disruption of the continuity of the environmental environment is. Interactions within the individual zones and their eventual spillovers beyond the boundaries of the given zone are decisive.

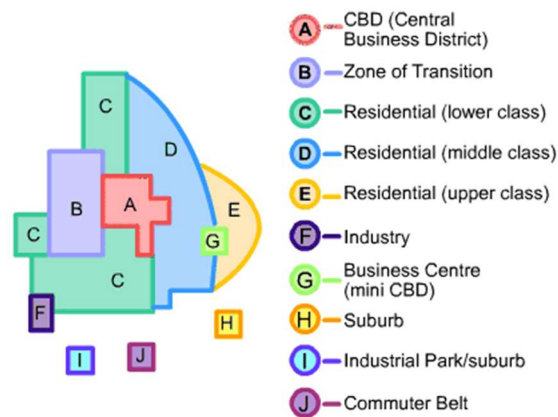


Image n. 2: Harris & Ullman's multi-core model of city zonal structure (S-COOL.CO.UK, 2023)

From the given image of the multi-core zonal structure of the city, it is evident that it will be quite difficult to predict further development or the creation of new zones. While in the Burgess model there is no other possibility of further development and the emergence of zones only from the center onwards, in the multi-core model the further progress cannot be identified and predicted with certainty. Everything depends on socio-economic systems. This variant of the more core model also carries with it far more global problems (see Table no. 1).

### 3 Environmental environment determined by socio-economic aspects and zonal structure of cities

In order to solve problems related to the environmental environment, it is necessary to orient oneself in the socio-economic systems and their aspects that make them up. The zonal structure of cities clearly identifies the processes taking place inside the zone and informs us about the risk of environmental threats depending on how the individual zones are built (see both cases mentioned above). For this reason, it is possible to use the structure of the city to lead effective protection of the environment from an ecological point of view. Create acceptable conditions for the protection of the environmental environment, following the reflection of socio-economic aspects, and very easily and highly effectively implement them in practice. In the following subsections, considerations of this protection will be developed.

#### 3.1 Environmental protection based on E.W. Burgess model of concentric zonal structure of the city

The simplest variant of the zonal grouping of the city for environmental protection is the Burgess model, as mentioned above. Global problems (see Table No. 1) can be very easily identified here.

Individual zones of the Burgess model are characterized by socio-economic systems. Based on these ongoing events within the systems, we can determine the type of hazard and impact on the environment through routine procedures - population statistics, demographics and other tools.

For example, if in "Zone II" we have a zone where factories and other industrial facilities are located, environmental protection measures can be introduced for these specifics on several levels already when planning the construction or development of a given city or area. We are thus perfectly aware of the possible eventualities of negative impacts on the environment in the event of an extraordinary event in the given "zone II" or as a result of the activities of the subjects themselves. Negative impacts on the environment can thus arise due to implemented and permanently active industrial events in the given area. This can represent, for example, noise or excessive light emissions. The plot present here is caused by socio-economic systems that bring and create job opportunities for the essential need for sustenance, social social application and realization of the individual.

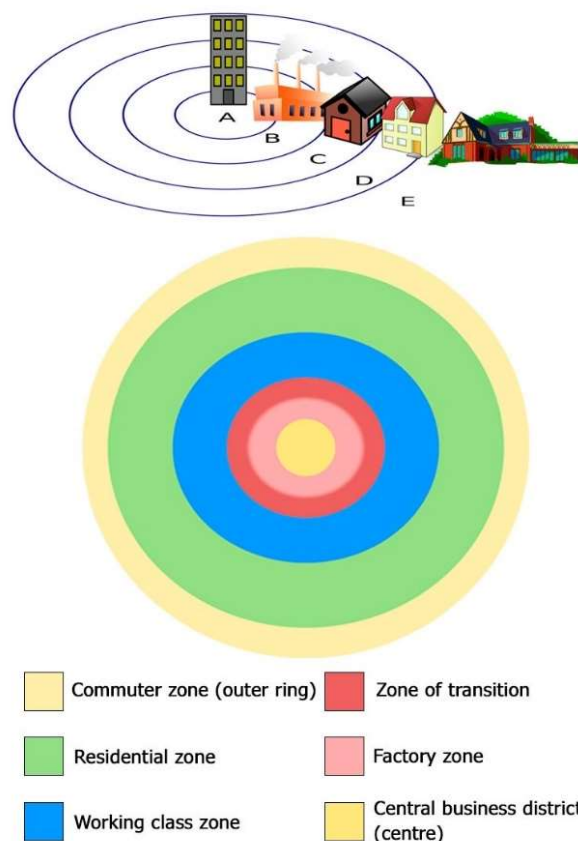


Image n. 3: General concentric zonal structure of the city by E.W. Burgesse (Reddit, 2023)

In the concentric model, we easily identify the incipient global problem of the "Environment" type (note according to Table no. 1). These are socio-economic systems and aspects such as energy problems, population explosion, poverty or backwardness of localities. This is characterized by some very striking demographic changes, e.g. from the center to the outskirts of the city, there is a decrease in the average age of the population in individual zones, and an increase in the average number of children in households. As a result, slums can arise on the outskirts of cities with low awareness of the



need for the sustainability of the problem-free running of environmental events in the given environment. (MUNI IS, 2008/2009)

The above-mentioned environmental problems must be solved well in advance, at the slightest sign of their emergence. Otherwise, just as it was easy to maintain acceptable and positively developing environmental conditions, the problem of the domino effect of unstoppably progressing environmental damage in individual zones will arise. Everything depends on the fact that the zonal structure of the city built in this way, when dealing with environmental protection, concentrates a large risk of endangering the environment, as a result of the impact of socioeconomic systems in one place, and moreover in a concentric structure. In the given case, there is a double kind of possible environmental devastation

- a) The implosion of a global problem,
- b) the explosion of a global problem

within the socio-economic system.

### 3.1.1 The implosion of a global problem within socio-economic systems

The implosion of a global problem concerning the environment is understood as an event when, due to the action of the failing socio-economic system on the outskirts of the city – poverty, lack of basic resources, increasingly deteriorating environmental conditions for life, the complete failure of socio-economic systems occurs and, as part of a domino effect, the systems collapse towards the center cities. In such cases, immediate revitalization of the environmental environment towards the outskirts of the city is necessary. These are, for example, towns with adjacent closed mine shafts in peripheral areas. Solution – creation of relaxation centers with greenery and water areas.

### 3.1.2 The explosion of a global problem within socio-economic systems

By the explosion of a global environmental problem, we mean the opposite of the implosion described above. The crumbling socio-economic system of the congested city center, increasing crime will lead to more and more extensive damage to the environment, which will spread to other, peripheral locations of the cities. An example can be Detroit, USA at one time. The solution is an immediate change in spatial planning, reconstruction, or a change from the concentric zonal structure of the city to a more core zonal structure. The environmental problem can then be solved partially.

## 3.2 Environmental protection based on Harris & Ullman's multi-core model of the zonal structure of the city

Environmental protection at the level of this socio-economic zonal structure represented by the Harris-Ullman model is already much more complex than it was with the Burgess model. The inconsistent disposition of individual zones defined by specific socio-economic systems presents multiple risks of



endangering the environment. In addition, these risks of environmental threats are not cumulative in the first stages and can appear at the same time, in different intensity, in different places (ie in different zones of the urban multi-core model of the zonal structure). The reason for this is primarily the larger number of different ethnic groups, which represent closed communities, localities, neighborhoods. The extremes of such isolation are the ghetto. However, many isolated cores may not be given only ethnically, but also by specific industry, trade, services or sports, or recreational activities.

These socio-economic systems with their socio-economic aspects will thus begin to participate in damaging the environment of the monitored zone to such an extent that it will begin to exceed the boundaries of the individual zones at one point. In this case, a non-concentric cumulative environmental hazard may begin to form. This fact is the reason why there must subsequently be a far greater, and not just zonal, consideration of environmental protection.

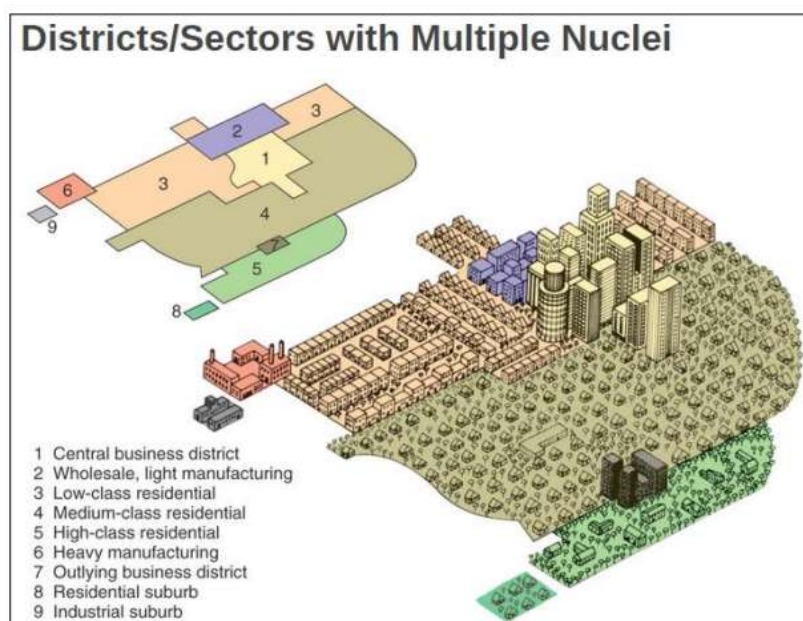


Image n. 4: Harris & Ullman's multi-core model of city zonal structure (Kulísková, 2015)

## 4 Environmental protection based on the reflection of socio-economic systems and their aspects

As part of the proposal for the effective protection of the environmental environment against the effects of the socio-economic system and its aspects, it is necessary to realize what today constitutes the functional values of society and to ask whether it would be realistic to systematically set up these socio-economic systems and their partial aspects differently. Give them a different value and change the overall perception of society's societal, social and economic priorities. A conscious society can thus not only maintain acceptable conditions within the environmental environment, but can even begin to create and further model these favorable conditions to its advantage. For this purpose, motivation is one of the least important socio-economic aspects at all. By choosing the right motivation in the form

of various benefits concerning all, not only elite groups, it is possible to achieve a sustainable system with re-cooperative properties within the functionality of the environmental environment.

For effective protection, it is also necessary to focus on socio-economic specifics at the borders of individual zones. If there is a threat to the environment, immediate measures must be taken. This should prevent the spread of negative impacts to zones adjacent to the given zone where the state of emergency occurred. The primary priority is to prevent the spread of environmental hazards to other adjacent zones. If we are dealing with environmental devastation to a certain degree in a given zone as a result of socio-economic processes taking place there, we should try to preserve the strict zonal delimitation of the given problem.

If it is necessary to maintain the communication of two zones within the setting of environmental protection elements due to the comprehensive elimination of the undesirable effects of socio-economic systems and their aspects, it is necessary to create bridging elements for these two affected zones. This element should be completely closed to other non-participating surrounding zones. In practice, this should mean that other zones should not be burdened with solving problems in these two zones. In this case, the existence of closed zones is very important and helps to effectively eliminate undesirable socio-economic processes that have a negative impact on the environmental environment. In this way, the conditions for effective remediation within the given zone and the conditions for setting up individual zonal ecological programs for the revitalization of the environmental environment can be achieved much earlier. By creating closed zonal systems of cities, it is thus possible to a certain extent to prevent global problems, especially problems related to the environment.

Another fairly frequent problem damaging the continuity of ecological systems is the tendency to push individual loads acting on the system and the environment to the edges of the zones. For this reason, it is necessary to pay attention also to the protection of these marginal zones, which are no longer completely part of the urban zonal structure. These "green" fringe zones of cities are quite often the target of megalomaniac development projects, which only aim to expand the socio-economic environment for profit, not to preserve the natural environmental environment.

## 5 The conclusion

The connection of socio-economic systems with the environmental environment with regard to the zonal structure of cities is more than desirable, due to the much greater efficiency of environmental protection. Knowledge of the processes of the socio-economic system in the individual zonal structures of the city enables effective prediction and a much faster and more effective response to emerging threats to the environment. With the help of setting socio-economic benefits for people participating in environmental development support programs, it is possible to manage effectively within the environmental environment. In the future with developing science and technology, this step will definitely be necessary. In this way, we will achieve at least a small reduction in the burden on the environment.

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