

Sustainable Tourism as a Part of Comprehensive Environmental Monitoring. A Study of Serbia

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Abstract: The sustainable tourism comprises the freedom of tourist travelling, satisfying the economic, social and aesthetic needs, with the preservation of the characteristics of the natural and social environment and the cultural and historical heritage. It should optimize the usage of environmental resources that make the key element of tourism development, maintaining the essential ecologic processes and helping in heritage preservation, and providing the sustainable long-term business.

As the consequences of the anthropogenic activities are obvious in the deterioration of the environment quality, the analysis of the status and influence on the environment and humans, as well as on the flora and fauna, must be under constant monitoring. The aim is to detect the corresponding influences and changes and to establish their cause.

The paper approaches the structure, the processes and the application of the comprehensive monitoring of the environment with the aim of creating a database for the development of sustainable tourism in Serbia. The risk of the anthropogenic pollution of the environment, as a result of tourist activities, and monitoring of these activities in order to create a database for a planned and coordinated activity of tourism development will be considered in detail.

Key words: *sustainable tourism, development, comprehensive monitoring, Serbia*

1. Introduction

Contributing a significant part to the global gross national product and the total employment of many countries, tourism has taken the leading role among the economic branches of numerous countries. The problems of the responsible conduct of all the subjects in tourism on the global level are dealt with by the UN World Tourist Organization and the World Council for Travels and Tourism, as well as other international organizations. Their aim is to establish the universal rules of conduct for all the participants in the development of tourism and other member countries. The researches have shown that the tourist economy, as well as, the institutions in the field of tourism have the task to establish, before all, the sustainable and responsible development with the aim to protect the environment as a resource of the tourist product (UNWTO, 2008; WCTT, 2011).

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The sustainable development of tourism implies "the development of tourism which satisfies the needs of today's tourists, tourist destinations and all the participants in tourism with simultaneous protection and increase of the potentials for the use tourist resources in the future, without jeopardizing the possibility of future generations to satisfy their own needs" (Stojanović, 2007, 12). According to authors Vučić et al. (2002) and Stanković (2004), sustainable tourism implies the right to tourism and to freedom of tourist movements, satisfaction of economic, social and aesthetic needs, with the maintenance of the characteristics of the natural and social environment and cultural and historic heritage. Sustainable tourism should make optimal use of environment resources, which represent the key element of the tourism development, maintaining the essential ecological processes and helping the protection of (natural) heritage, as well as to provide a sustainable long-term business.

The general strategy of the environment protection is based on the maintenance of the fundamental ecological processes in the environment, on the protection of the genetic fund and the provision for rational usage of biological species of ecosystems (Vaughan et al., 2003). As the consequences of anthropogenic activities are also evident in the decline of the quality of the environment, the analysis of state and impact on the environment and the impact on biodiversity has to be the subject of continuous monitoring. The aim is to timely detect the appropriate impacts and to identify and explain their cause. In that sense, monitoring systems for determination of the state and changes of the environment are successfully used today.

In this paper, the structure, processes and implementation of integrated environment monitoring are considered, by the aim, to create the necessary database for the development of sustainable tourism of Serbia. The detailed study will deal with the risks of anthropogenic environment pollution through tourist activities and their monitoring, aiming to form the basics for the planned and coordinated activity of tourism development.

2. Strategic Aims of Tourism Development

The modern development of tourism is based on the authentic quality of space and resources. For that reason, and especially for the provision of the basis for its own long-term sustainable development, tourist economy in Serbia has to have the protection, improvement and rational usage of space and resources as its top-priority task. The essential aim of the strategic access to the tourism development and the definition of tourism development policy, together with people and destinations, aiming to improve the basics of strategic access to tourism development: appropriate management of tourism development, homogenization of development between tourism and other economic activities and the increase of tourism through specialization and making connections among all the exponents of tourism development (Čomić, 1988).

The concept of sustainable development can become a basis for purpose-serving tourism development in a country, if its principles are included in the process of strategic planning of tourism development and if they are expressed in the development strategic aims. The definition of the main aims of tourism development is the central issue in the scope of strategic tourism planning on a macro level. Their importance is especially emphasized by the need to synchronize the relations among all the activities taking part in the satisfaction of tourists' needs. The heterogeneity of these activities makes necessary the existence of institutionalized framework defined by the state and its organs.

The basic and priority aims of tourism development within the strategic planning can be quite numerous, diverse and often conflicting. According to Stojanović (2007), the basic strategic aims of tourism development in Serbia are the following: encouragement of economic development, increase of foreign-exchange earnings and the increase of employment. Besides these basic aims, the following aims are also mentioned: creation of a favourable image of the country, environment protection, the protection of cultural and historic heritage, the improvement of life quality, the protection of consumers and the encouragement of economic development in underdeveloped regions.

The relation among certain exponents of tourism policy, on different levels, is especially important for the definition and accomplishment of tourism development goals. The matter of competence distribution among certain participants in the development management is vital because of the usual existence of many decision-making centres, which are often in conflict, and they can have an powerful influence on the conditions for achieving the defined aims.

3. Sustainable Tourism and Its Development

There is no uniquely accepted definition of sustainable tourism that assumes not only the adherence to the principles of sustainable development, but also the ethical changes in all the participants, in the tourist process. Sustainable tourism in its basic sense implies an economic branch which has a minimal influence on the environment and local culture, and which, at the same time, helps making profit, new jobs and the protection of local ecosystems (Stanković, 1979; 2003). Actually, it is a responsible tourism, which is friendly to the natural and cultural heritage. The simplest definition is that sustainable tourism implies "every aspect of tourism, which contributes to the protection of the environment, social and economic integrity and to the improvement of natural, created and cultural values on a permanent basis" (Romelić, Tomić, 2002, 19).

The main aim of this aspect of tourism is to enable people to enjoy and obtain knowledge about the natural, historic and cultural characteristics of a unique environment, with the protection of the integrity of a place and the encouragement of

economic development and welfare of a local community. Sustainable tourism includes all segments of the economy together with the instructions and criteria that imply the decrease of tourist traffic impact on the environment, especially the use of non-renewable resources and the contribution of the tourist activity to sustainable tourism and the environment protection. According to Vratuša and Anastasijević (2002) sustainable development also implies the development of tourism which satisfies the needs of today's tourists, tourist destinations and all the participants in tourism, with the simultaneous protection and increase of potentials for the use of tourist resources in the future, without jeopardizing the possibility of future generations to satisfy their own needs. It implies the improvement of people's life-style quality within the possibility of the ecosystem that surrounds us.

Sustainable tourism development implies the right to tourism and freedom of tourist movements, satisfaction of economic, social and aesthetic needs, with maintenance of the characteristics of natural and social environment and cultural and historic heritage. According to UNWTO (2008) and WTTC (2011), sustainable tourism should:

1) optimize the use of environment resources, which represent the key element of tourism development, maintaining the essential ecological processes and helping the protection of natural heritage and biodiversity,

2) respect social and cultural authenticity of tourist destinations, protect their built and modern cultural heritage and traditional values and contribute to the understanding and tolerance among cultures and

3) provide with sustainable long-term business making socio-economic benefits, which are fairly distributed to all the interest groups, including stable business, possibilities of making a profit and social care for the communities of the host, as well as contributing to the decrease of poverty.

Sustainable tourism should also obtain a high level of tourists' pleasure and provide tourists with content-rich experience, increasing their awareness about the issues of sustainability and improving the practice of sustainable tourism among them. To achieve the development of sustainable tourism, an integrated access to its planning and management is essential. Researches of Stanković (2004) show that some of the most important principles of the development of sustainable tourism imply that:

- Tourism has to be developed with the help of the local community, which has a task to conduct the monitoring.
- Tourism has to provide local population with high-quality jobs and to establish a connection between local business and tourism.
- A code of conduct in tourism has to be established, and it has to be based on internationally accepted standards. It is also important to define the recommendations for tourist activities, the assessment of the impact on the

environment, the monitoring of cumulative impact and the limits of acceptable changes.

- Design cultural, educational and vocational programmes with the aim to improve natural resources.

As a subcomponent within the field of sustainable tourism, *ecotourism* should be emphasized. It primarily represents a sustainable version of tourism based on the nature, and it includes both rural and cultural elements of tourism. Ecotourism tends to reach the results of sustainable tourism in all forms. Nevertheless, it is important to clarify that all the tourist activities – whether they are tightly connected with holidays, business, conferences, congresses or fairs, health, adventure or ecotourism – should have sustainability as their aim. It means that planning and development of tourist infrastructure; its further business, as well as its marketing, should concentrate on social, cultural and economic sustainability criteria (Čomić, 1998; Crnogorac, 2002; Đekić, 2002).

Ecotourism is defined, within the market, as a form of tourism based on nature, but it has also been formulated and studied since 1990 by nongovernmental organizations, experts on development and scientists and as a means of sustainable development. The term ecotourism, therefore, refers, on one side, to the concept that includes a set of principles, and on the other side to a special segment of the market. The International Ecotourism Society (TIES) formed one of the first definitions of ecotourism in 1991 as "a responsible travel into the nature which protects the environment and maintains the welfare of the local population".

4. Methodology and Results: Environment Monitoring with Sustainable Tourism Development

Methodology of this paper is based on the interrogation of many bibliographic resources in Serbia (Stanković, 1979; 2003; Čomić, 1988; Živković and Stanković, 1999; Đekić, 2002; Stojanović, 2007), as well as researches in other countries, such as papers by Jenkins et al. (2006) and Macleod and Gillespie (2010). In the field of environment, the term *monitoring* was first introduced in 1972 by R. Menom on a UN conference in Stockholm. Since then, it has constantly been used in scientific and professional literature primarily for denoting activities connected with a system of constant monitoring of the parameters characterizing one or more elements of the environment, for gathering data on them and for their analysis using different programs. In the period between the 70s and 80s, depending on the object of monitoring, a series of terms referring to the control of the environment appeared such as: "ecosystem monitoring", "ecological monitoring", "hydrosphere monitoring", "geo-monitoring", "biological monitoring" etc. One of the first classifications of systems and subsystems of monitoring was given in the early 80's by J. A. Izrael (Table 1).

According to previous classification, the systems of monitoring are classified according to the complexity of tasks they solve, the monitoring objects, the regional limits and the employed methods. A detailed scheme of the general classification of monitoring types was given by Živković and Stanković in 1999. According to this classification, the following types of monitoring are distinguished: environment monitoring, biosphere monitoring, atmosphere monitoring, subterranean and surface waters monitoring and litho-monitoring. Also, there are different classifications of environment monitoring system. The structure of environment monitoring contains complex connections between the environment and the level of monitoring.

Monitoring is extremely beneficial for the scientific management of tourist destinations and protected areas (Fig. 1). Monitoring identifies a "normal" scope of changes of tourist destinations by establishing a temporary basis, according to which the changes can be noticed, and appropriate activities of management to the recognized changes can be applied. When the management is regulated, monitoring has a key role in management application by identifying the necessary adjustments and the decision when management aims are achieved. Monitoring can also identify the need for scientific research in order to explain the causes of temporary changes.

Table 1. Monitoring system classification (according to Izrael, 1980)

The principle of classification	Monitoring systems
Universality of the system	Global monitoring National monitoring Local monitoring
Biosphere subsystems	Geophysical monitoring Biological monitoring Environmental monitoring
Environmental type	Monitoring of the atmosphere Monitoring of the land Monitoring of the ocean Monitoring of the surface water
Monitoring factors and resources	Monitoring of pollutants Monitoring of pollution sources
Globalism of the problem	Monitoring of the ocean Monitoring of the ozonosphere Genetic monitoring
Monitoring indicators	Monitoring the physical indicators Monitoring the biological indicators Monitoring the chemical indicators

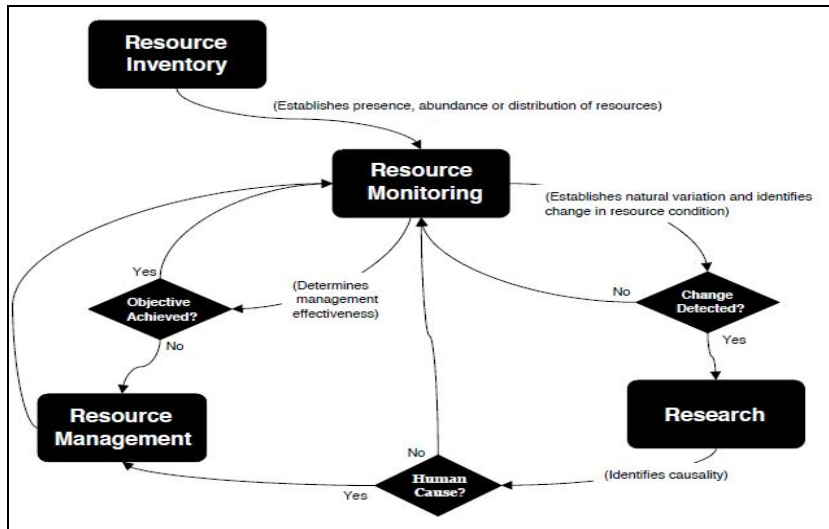


Figure 1. Relationships between resource inventories, monitoring, research, and resource management activities in travel destinations (Jenkins et al, 2006, 6)

Ecological monitoring is a sequential measuring of ecological systems during the time with the main purpose to find new components, processes and functions. On the contrary, a research is a period of time, during which a resource in a region is quantified. It is often expected that ecological monitoring can help explain the complex relations in ecological systems, so that it can be, generally, said that monitoring is a tool for determination of what has caused the change (Woodley, 1993). In order to detect and remove the changes in the ecosystem the best way possible, constant monitoring is done, and recent data are compared with those of the previous years.

The aim of ecological monitoring is a promotion of knowledge about ecological dynamics, processes and functions of ecosystems (Vaughan, 2003). Such knowledge is necessary to help managers of tourist destinations identify problems, make decisions based on ecology, formulate plans for management and present the public the results of ecological monitoring implementation. According to Živković and Stanković (1999), monitoring in protected ecosystems has a distinct role in the society because of defining something which exists in nature and which is necessary to be maintained. Therefore, special aims of monitoring are defined in order to develop prototypes of monitoring programs:

- Definition of the state and ways of choosing the conditional quality indicators of the ecosystem, so that tourist destination managers could make the best decisions.
- Provision of quick warning about critical conditions of the chosen resources so that efficient measuring could be carried out and the price of management reduced, and

- Provision of more data for the better understanding of nature dynamics and conditions that exist in an ecosystem (Figure 2. presents one way of achieving these goals).

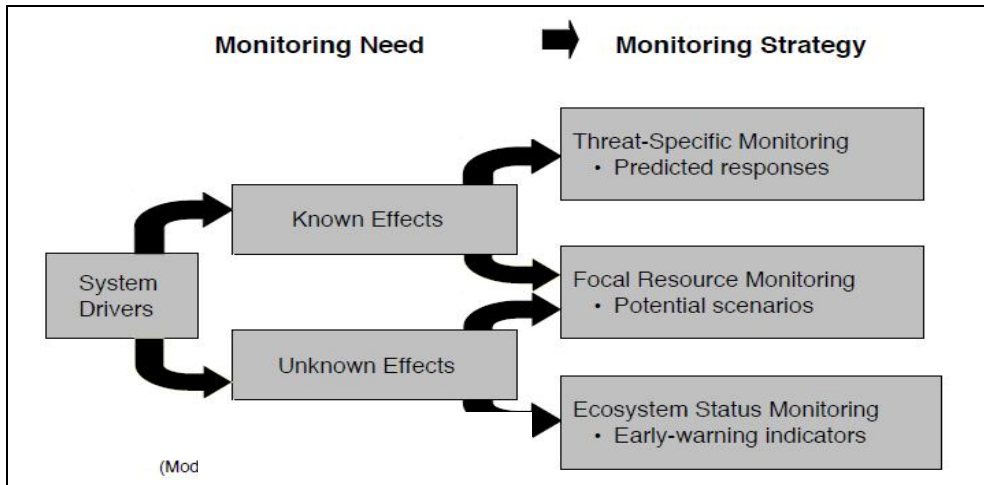


Figure 2. A multi-faceted approach for monitoring known and unknown effects of system drivers on ecosystem integrity (Jenkins et al., 2006, 8; modified from Woodley, 1993)

The impacts of ecosystems, both natural and anthropogenic, are the main factors of changes in ecosystems of tourist destinations, such as Serbia. This could refer to global or regional changes in the climate and human factors. The aim is to propose the kind of the expected change on the grounds of ecosystem impact and to provide an early warning about the changes in an ecosystem. The monitoring of the effects of the known negative impacts will provide useful information for ecosystem management. The indicators of ecosystem integrity will provide the possibility of an early warning about a danger for a long period of time. Ecological integrity consists of chemical and physical integrity. The resources of an ecosystem represent a quality of tourist destinations that are monitored during the observation of changes in the ecosystem (Stojanović, 2007). The general strategy of the environment protection is based on the maintenance of fundamental ecological processes in the environment, on the protection of the genetic fund and the provision of rational use of ecosystem resources. As the consequences of anthropogenic activities are evident in the decrease of quality of the environment, the analysis of state and environment impacts and human impacts, flora and fauna have to be the subject of constant monitoring. The aim is to timely detect adequate changes and determine their cause.

Socioeconomic aspects of the problems of anthropogenic activities on the environment are important factors that have to be kept in mind when considering the

main principles of monitoring. Their practical realization should be an element which assures the balance among men, natural resources and production. In that sense, today, different systems of monitoring are used to determine the state and changes in the environment. *The monitoring of anthropogenic environment pollution* is considered an integrated part of monitoring. It is defined "a complex measure with the aim to define the state of biosphere and observe the disturbance of ecological balance by anthropogenic factors of pollution" (Woodley, 1993, 170). The monitoring of anthropogenic environment pollution represents a system of successive observations of environment elements in space and time. It aims at gathering and analyzing quantitative and qualitative data about the presence and distribution of pollution, to observe the emission and immission of pollution sources and their arrangement, pollution transport, and finally to determine their concentration on certain measuring points. The data about monitoring parameters in Serbia, e.g. the information about polluters and polluting matters which cause or which can potentially cause permanent consequences on the environment system which is monitored, are necessary for defining factors and mechanisms of disturbance of biological processes, discovering the ways of pollution migration in the environment, as well as their transformations and biological accumulations.

The tasks of the monitoring of anthropogenic environment pollution are organization of systematic observations of changes in the biosphere which are caused by anthropogenic polluting matters, the estimate of the observed changes and prognosis of tendencies in biosphere changes. The system of monitoring the anthropogenic environment pollution consists of the organization subsystem, the monitoring process and the information subsystems (Izrael, 1980).

According to Woodley (1993), the structure of monitoring subsystems is made of smaller subsystems of individual environment polluting factors monitoring, such as pollution source monitoring, atmosphere pollution's monitoring, surface waters pollution monitoring, groundwaters pollution monitoring, sea pollution monitoring, soil pollution monitoring, monitoring of risks from biotopes pollution and monitoring of risks on human health.

5. Integrated Environment Monitoring

The development and protection of the environment are extremely complex management problems. In this century of convergence of many sciences and disciplines, quality is one of the fields that have developed very quickly and it has transformed from the quality control in the industry into a new philosophy of management. The term *quality* is multi-layered, and it refers both to the quality of products, processes and services and to the quality and efficiency of functioning. It is a consequence of a stormy

technological development during which the aims and demands are becoming bigger and more complex (Kosar and Rašeta, 2005).

Standards series ISO 9000 (especially JUS ISO 9004 – quality management and the elements of the quality system) have wide implications on functioning of enterprises, and at some points they are explicitly the requests of society, among which the one for protection the environment which should be a responsibility of an enterprise which has an efficient, quality system. Standard series ISO 14000 entirely refer to all aspects of ecological management. According to Jenkins et al. (2006), the system of ecological management, according to standard series 14000, which are in the phase of definite adoption, thus has an aim of continuous improvement of environment performances on the level of society and every enterprise, by planning the requests, aims and programs, by introducing and providing the functioning of all the system elements. The basic hierarchy systems of social values and aims are obviously reevaluated on international and national level by introducing components of the environment protection in development processes. Some of the most significant aims of the environment protection in Serbia are the following: creating the basis for making a human-oriented society; providing conditions for the interests deriving from the concept of sustainable development and environment protection to be analyzed and respected when planning the development of settlements and the use of soil; gradually introducing the principle "the polluter pays" and the protection of "satisfactory" ecological balance and taking part in biosphere protection (Crnogorac, 2002).

In the program of integral environment protection, a special attention is given to the introduction of economic instruments in order to establish an efficient system of resource division. One of the hardest aspects of designing a program of monitoring is the integration of the project of monitoring so that the whole program of monitoring gives more information to the whole community, and not only to some individual group which carries out the monitoring (Vaughan et al., 2003). Therefore, the exchange of information among the teams that carry out the monitoring out of the limits of a country is also necessary.

Although the integration is a subjective aim according to which it is hard to find a program for improvement identification, there are a few aspects of integration as strategic aims of integrated monitoring, which can be apply in case of Serbia:

- Ecological integration may include the examination of ecological connections among components, processes and functions of an ecosystem when choosing the monitoring indicators. The most efficient strategy of ecosystem monitoring could consist of a series of individual measurements used for the supervision of the entire ecosystem.
- One of the strategies of an efficient ecological integration is the choice of indicators on different hierarchy levels of an ecological organization.

- Spatial integration can include the connection of the measurements made in different places, including different prototypes of ecosystem monitoring. It requires the knowledge about ecological processes, comparative analysis of measurements in different places and the design of a monitoring that allows the interpolation of the measured data.
- Temporal integration includes the making of connections between the measurements made in different periods of time (Stojanović, 2007). Thus, it is necessary to determine the time for measuring of different ecological attributes during changes of the characteristics of those attributes.
- Methodological integration includes the choice of measuring methods that enable the sharing of data between Serbian neighboring countries that carry out similar monitoring.
- Program integration includes coordination and communication of the activities of ecosystem monitoring and the use of the resulting data. Also, the coordination and integration of monitoring activities between different prototypes of monitoring programs is important in order to achieve a greater efficiency of ecosystem monitoring.

6. Conclusions

Sustainable tourism is the most functional if it is accomplished with as few as possible disruptions of ecological relations and processes in the given space. The planning that precedes sustainable tourism is positive, contrary to the negative sanitization of the consequences. The positive impact of sustainable tourism on natural heritage reflects in the protection of other activities. Sustainable tourism effects the legal regulation of the status of natural goods, which is expressed in the examples of national parks, nature reserves, the objects of the world natural and cultural heritage (UNESCO), or of the objects from the list of the world biosphere reserves (MAB).

The positive effect of sustainable tourism is that it arouses the awareness of people about natural goods. Inadequately designed and over-dimensioned tourism causes negative developments and processes: the pollution of air, water, soil, the changes of flora and fauna, noise, landscape degradation, etc. It is evident that there are problematic collisions, which refer to an unplanned access and a failure to carry through the plans, the degradation of natural heritage by tourist building. It is necessary to point objectively and in wide social dimensions to the conflicts and complementarity in the relations *tourism – environment*.

The development of tourism in Serbia must be planned and based on the modern requirements of sustainable development. The most important in this respect would be to make a space arrangement that complies with the needs of tourism, so that to avoid the trespassing of the main ecological laws, whether they refer to attractions protected

by law (national parks, nature reserves etc.) or to the entire nature. Beside the Serbian environment protection, the focus is also on the maintenance and improvement of its tourist values. In that sense, it is essential to respect and implement the integrated monitoring so that the consequences should be minimal.

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