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MOUNTAIN ECOSYSTEMS AND RESOURCE MANAGEMENT

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Sustainable Tourism Development in Mountains

Tourism phenomenon

- **Tourism** is an economic activity, which belongs to the invisible trade section of the balance of payments accounts. It is deemed to be an export of services to the foreign countries from which the visitors originate. There is no universally agreed **tourism** perspective and the nature and core of tourism still remains a disputed subject (Smith, 1994; Theobald, 2005; Page& Connell, 2006). Often, tourism is referred to as an invisible export industry with no tangible product (Page& Connell, 2006; Sadler& Archer, 1975) or ‘a multi-product industry that encompasses a number of different economic activities’ (Wall& Mathieson, 2006:119).
- Its **phenomenon** is able to solve economic, social, public, environmental problems. Many countries consider tourism to be an effective economic mechanism.

- *The interaction of the socio-economic cycle is completed by providing consumers with a certain set of values (a tourism product), aiming to satisfy tourist needs of the population.*

It is necessary to reveal the contents, effect and significance of each group of elements of the industry tourism development in Mountains

- **Transportation and mass communication.** Transportation is one of the most important conditions for the promotion of tourist services. This is presented by the transport infrastructure (air, rail, water, road, public transport), which performs the function of a comfort and speed conductor to certain tourist sites and destinations.
- **Promotion and selling of tourism services.** This group of elements is represented by the activity of travel agencies, tour operators, tourist information office, etc. They ensure the availability and diversification of the market offer in the field of tourism. These enterprises directly form a tourist product of different consumer characteristics. But the promotion of the tourist product is impossible without advertising. Therefore, companies that specialize in providing services in the advertising sector are also associated with the process of realization of a tourist product.
- **Food and accommodation.** The elements of this group should include such places of temporary accommodation, as hotels, motels, hostels, campgrounds, etc. The eating places are restaurants, cafes, bars, canteens, mobile trade food, drinks. These facilities provide a primary need of a tourist as a person.

- **Financial, insurance, medical organizations.** This group of elements is represented by banking institutions that provide insurance services, and simplicity of money usage through international payment systems. Compulsory insurance is also an indirect service that is always used by tourists going abroad. And the third element in this group is medical care, which comes in need when tourists face with health problems while traveling.
- **Trading and entertainment.** The trading and entertainment facilities in this group include shopping malls, fairs, exhibitions, parks, zoos, amusement parks, etc. It should be noted that entertainments have a regular contact with the trade, after all, selling of souvenirs, food and other commodity reflects the nature of tourism in the region.
- **State and civil administration.** This group represents the government and public authorities which establish and implement the state policy in the field of tourism with the help of laws, bylaws, regulations of the Cabinet of Ministers, orders of the President. Coordination of the state policy is carried out by local authorities (regional and city departments and tourism offices). The activity of public organizations in tourism, which are different federations, unions, association, etc. are also important.
- **Education and science.** This group presents educational institutions that provide training of specialists for the tourism industry, as well as scientific centers, institutions dealing with the problems of functioning and development of the industry.

Figure below, illustrates the overlap and inter-related nature of the relationship between the tourism and hospitality industries. Definitions for both industries cover hotels, accommodation, restaurants and public houses. Activities specific to the hospitality industry include catering activities, licensed clubs and takeaway food shops. Activities specific to the tourism industry include travel agency activities, cultural activities, sporting and recreational activities, and passenger transport services.



Current stage of Ukraine's development is characterized by expansion of recreation activity which anticipates growing of capacity and efficiency in environmental-related activity within territorial recreation systems (TRS)

The main disadvantage is a lack of systemic approach in the scientific solution of TRS steady development.

The topicality of chosen problem in the global context was represented in results of set international meetings.

For instance, "United Nations Millennium Declaration" carried by United Nations General Assembly on 8th September 2000, United Nations Conference on Sustainable Development "Rio+20" (Rio de Janeiro, Brazil, 20-22 June 2012) etc.

That is why elaboration of the sustainable development strategy of territorial recreation systems (TRS) is currently central, especially for the biggest Ukrainian recreation region – Carpathian region

Development of tourism in the context of sustainable development Strategy

was studied by M. Pedrana,
Andreas Freytag & Christoph Vietze,
Tiberiu Cristian Avramescu,
Ioan Franc, Valeriu & Istoc,
Elena Manuela, V. K. Babarytska,
O. O. Lyubitseva, T. I. Tkachenko,
I.V. Smal & V. V. Smal, L. M. Cherchik etc.

A substantial contribution to some theories of sustainable development was made by
G. P. Andreeva, M. P. Butko,
O.A. Vorobjev, Y.Y. Hurbyk,
O.Yu. Husljakov, V. M. Dmytrenko,
P. V. Zacharchenko, O.V. Kafarskiy,
H. M. Medjanyk, O. H. Rozmetova,
N.V. Jatsuk etc.

Despite importance and value of conducted researches, ecosystem approaches to sustainable development remain incomplete.

RESULTS of research

The object of study recreational geography is territorial recreational systems (TRS).

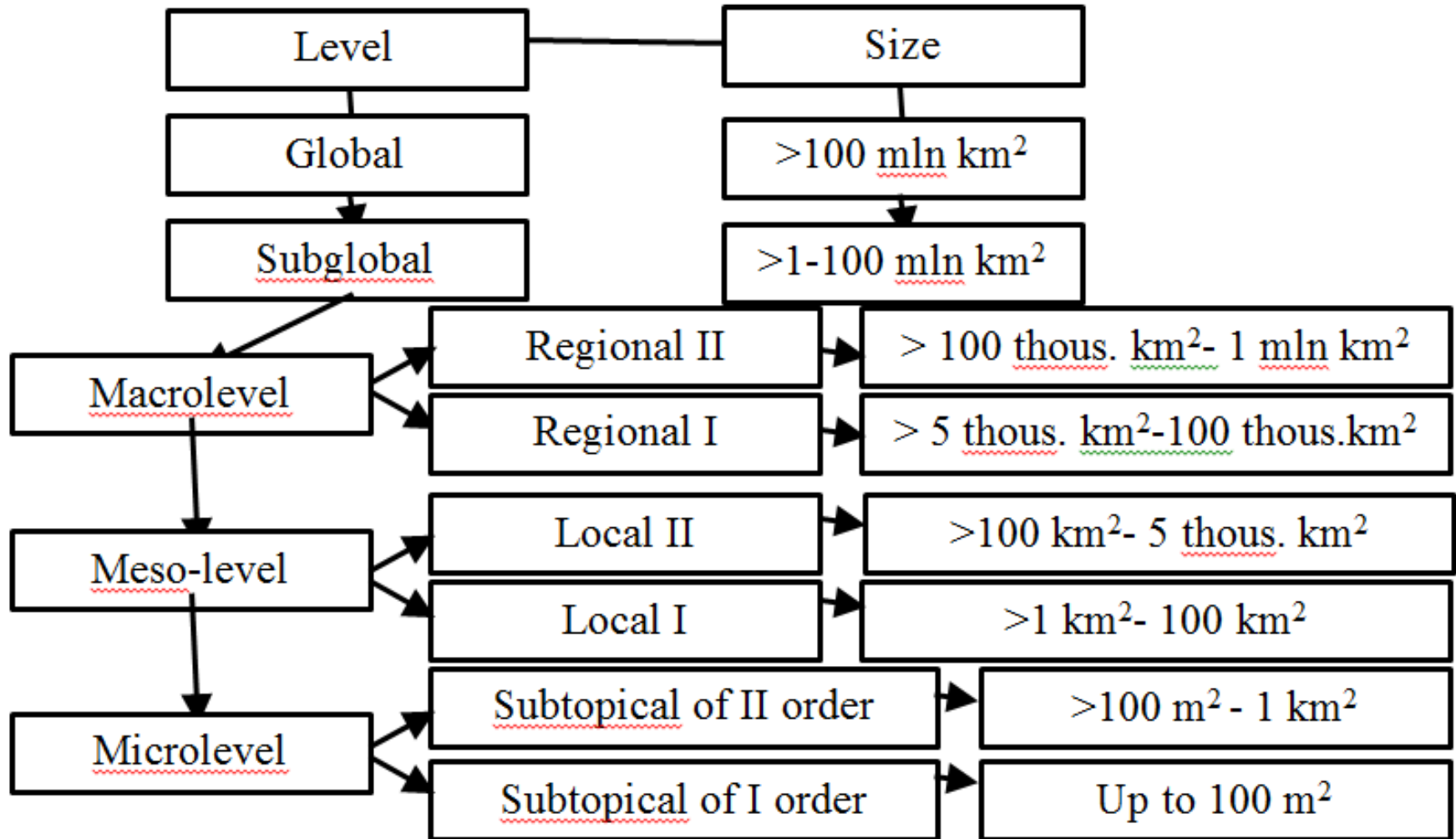
Considering the object of recreation geography from the systems theory standpoint, any recreation system may be presented by complex of interrelated social, cultural, technical and natural spheres so it is an information system.

A process repeating in a recreational system is triggered by cyclicity of natural factors. An integral characteristic of such influence is buffering capacity. Today anthropogenic activity on an environment is quite substantial. That's why, in the authors' opinion, the buffering capacity of a recreational system is the main factor, which determinates further sustainable development of TRS.

The problem of sustainable development of TRS needs studying of processes dynamic in terms of natural and technogenic systems. The natural and technogenic system is considered by the authors as the spatiotemporal complex of material substances and both natural and anthropogenic processes. By virtue of them, within the territorial systems, including recreational ones, the exchange of material substances and energy occurs.

Studying temporal and spatial structures it's necessary to pay attention to the notion of size because all conclusions made about TRS depend on the size they are studied in.

Classification of TRS according to their size



Understanding of spatiotemporal character of TRS variability is a key for different approaches in sustainable TRS development investigation.

Authors of the present article subscribe to the opinion of researchers convinced that structure is a complex of those components of the system which are essential from the standpoint of conducted exploration and those which have invariability at the whole interval of functioning, interesting for the researcher or at the every nonoverlapping subset included into the interval of functioning. The last one specification allows considering the sustainable development of TRS among “systems with a changeable structure”.

Based more on practical studying of the sustainable development, than philosophy thinking, the author defines a structure as a complex of heterogeneous subject characteristics. They belong to the three aspects: the ratio between certain components, interrelation between components, changing of components and the subject at large. Authors convinced that for the prospects of exploration of the sustainable development of TRS, their structure gives much more information than dynamics of recreants and the state of an environment.

TRS are open type systems; their peculiarities and structure are determined by external, in relation to them, environment (exo-system processes) as well as by internal (endo-system) ones.

Formalised model of TRS

TRS can be described by the relation:

$$S = \{X, Q\}, \quad (1)$$

$$X = \{X_1, X_2, X_3, \dots, X_n\}, \quad (2)$$

where Q - the set of patterns of the X elements changing, their interaction with each other and with the environment;

X - elements of system S in the form of a specific set of parameters; n - the number of components

The set of X elements of is the content of TRS..

Thus, TRS (S) can be divided into natural (Z) and anthropogenic (W) subsystems with their own subsystems, elements and connections:

$$S = Z \cdot Q \cdot W. \quad (3)$$

Let us denote the plurality of external factors of TRS by symbol F.

$$F = \{F_1, F_2, F_3, \dots, F_m\}. \quad (4)$$

The set of relationships (links) between elements within the TRS as well as between TRS elements and environment which is called the structure of TRS (symbol S) is denoted as:

$$R = \{R_1, R_2, R_3, \dots, R_l\}, \quad (5)$$

where R l - number of connections that form the structure of the system S.

The composition of TRS X, environmental factors F and the structure R change in the process of sustainable development through time t and space h. This change in the general form can be described as follows

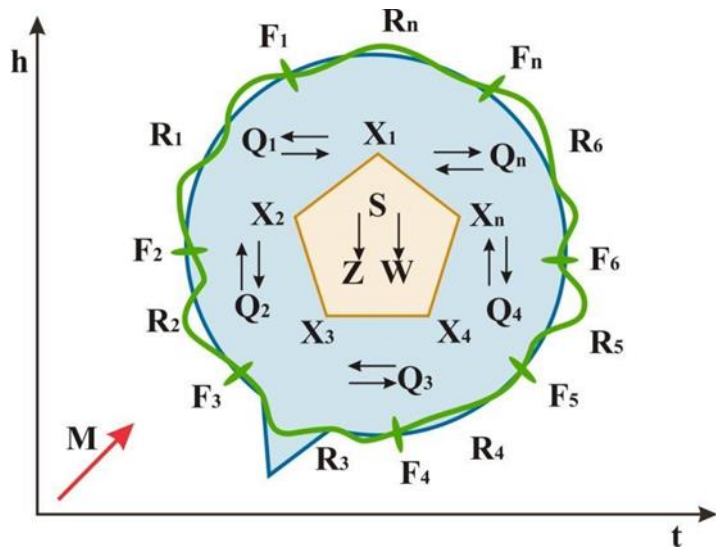
$$X = X(t, h) = \{X_1(t, h), X_2(t, h), X_3(t, h), \dots, X_n(t, h)\}, \quad (6)$$

$$F = F(t, h) = \{F_1(t, h), F_2(t, h), F_3(t, h), \dots, F_m(t, h)\}, \quad (7)$$

$$R = R(t, h) = \{R_1(t, h), R_2(t, h), R_3(t, h), \dots, R_l(t, h)\}. \quad (8)$$

Sustainable development in time and space of elements X (t, h) and the structure R (t, h) of TRS depend on external factors F (t, h) and it follows the function M (t, h).

Based on the results of previous studies generally and especially Geosystems, authors made a mathematical formalization of sustainable development of TRS.



Formalised model of TRS

- TRS is the unique form of existing and moving of matter within certain spatiotemporal limits so dynamic state of the system in all aspects is its native attribute. The main reason of the TRS dynamic as an open system is instability of external factors forming it. Any external impact on the TRS is an impulse to the matter and energy transformation as well as dynamic processes in the recreational environment.
- Thus, TRS that is the subject of this study is defined as the dynamic set for the purpose of recreation of anthropogenic subjects and processes within geosystems. Their activity continually influences on an environment, changes quantitative and qualitative parameters of Geosystems, and it is affected by the man-made changes. Sustainable development of TRS provides such organization of recreational activities when territorial geosystem does not go beyond the homeostasis levels and increasing of a recreational load is limited by buffering capacity of TRS.

CONCLUSIONS

- 1) The functional properties of the recreational environment are substantiated using the example of biosphere ecological concept and ecosystem's framework approach for the sustainable development of territorial recreation systems.
- 2) In the issue of the sustainable development of TRS, it makes sense to study the dynamic processes in the prism of natural and man-made systems. Under the natural-technogenic system, the authors understand the dynamic spatiotemporal range of materials and processes both natural and anthropogenic, through which the exchange of matter and energy in the local systems, including recreation ones, occurs. According to the authors, the buffer capacity of recreation system is the dominant factor determining the prospects for the sustainable development of TRS.
- 3) According to the principle of the functional and integrated system, TRS are distinguished as the amount of space; Geosystem is its framework. The combination of theoretical and methodological foundations of the doctrine of functionally integral geosystems with the concept of multi-vector nature of recreational environment formation, allowed pointing out and specifying those TRS, which operate within a certain space. The authors proposed a hierarchical classification of TRS according to their size.
- 4) In this paper, the mathematical formalization of sustainable development of TRS is suggested. It can be used for the following definition of the subject of research: territorial recreational system that operates in the environment, is the set of subjects that formed from a set of internal components interconnected with each other and with the environment by set of connections which vary in the process of sustainable development in time and space according to the set of functions.