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Sustainability in tourism developing walking and cycling network in South-western region of North Macedonia

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Abstract: Tourism is one of the leading growth industries in the world. Alongside its economic and socio-cultural significance, tourism also has negative environmental impacts, which are particularly highlighted when environmentally sensitive regions are affected. In biodiversity-rich areas, opening of sensitive and fragile areas through expanded and upgraded transport infrastructure may prove detrimental to the environment of the area. The mountainous area of the South-western region in North Macedonia with its nature, cultural and historical heritage has potential for development of tourism. Already the cycling and walking paths are at the place, with an intention for expansion and continuity of their network. The purpose of the paper is to devise recommendations for development of sustainable tourism through the analysis of the current and proposed transport infrastructure for walking and cycling in this region, that has an inoffensive environmental impacts. Hence, this paper constitutes an important contribution to the further debate on the need to make tourism more environmentally friendly and sound, not just in the South-western region in Macedonia as the most touristic region, but also at the nation level for the whole country.

Key words: sustainability, cycling, walking, infrastructure, tourism

1. INTRODUCTION

In the past few decades there has been a substantial growth in tourism in natural regions as tourists have demanded access to wildlife as non-destructive manner as possible [1]. Mounting cycling, paragliding, walking in nature, all are increasingly in common. Policed properly, much of such tourism is either inoffensive or has potentially beneficial effects [2, 3]. The biggest environmental threats posed by this type of tourism lie unequivocally in the nature infrastructure and transport arrangements needed to support it, especially in situations where many tourists are subject to little control [3]. Physical development in nature contributes to substantial, often irreversible environmental degradation and consequences.

The present paper is limited to those areas of environmental concern that are of high priority for protection. The South-western region of North Macedonia which is the subject of this analysis, comprises one national park and other mountainous areas whose ecosystems should not be disturbed by the tourism development in uncontrolled way. In this analyzed region, cycling and walking paths already exists, but the intention of local authorities is to extend their length and promote ecotourism, as well as promotion of the tourism potential of nearby urban centers, rich in cultural and historical heritage. Hence, the paper gives recommendations for handling with potential impacts that tourism has on the environment. In the development process of sustainable tourism the attention should be paid to the vulnerability of natural

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and cultural resources to tourists pressures, i.e. the effect that the tourism will have on the broad environment [4].

This paper suggested that although the future development of sustainability in tourism depends of the sustainable planning and quality in the infrastructure network, the environmental impacts should be considered and properly managed at the same time. Therefore the paper points out the general and specific recommendations that could be implemented for the areas of environmental concern, which would lead to the sustainability in the tourism.

2. LITERATURE REVIEW

First, it must be underlined that this paper is a product of very comprehensive study for walking and cycling infrastructure in South-western region [5], performed by professors of the Faculty of Technical Sciences TFB in Bitola, Republic of North Macedonia.

For the purposes of our research, several studies, reports and other documentation were analyzed presenting a good direction how to start and offer necessary data for our needs.

We started to study the documents [6-8] which we found to be very useful, containing the analysis of the development program and creating a guideline for the South-western region development and for regional development in general. Information and data included in these documents, which are closely connected with the development of the tourism in this region, refer to demographic structure and trends, employment, income, climate, landscape, etc., and serve as a direction for preparing the frame of the questionnaire and defining the questions.

Also, a specific research was performed for the development of the strategy for tourism [9-12], about the potential for its development, as well as the benefits and consequences of tourism for the region's natural area. The importance of these directions (touristic demand and offer, natural and anthropogenic touristic assets in the region, sensitivities of the region) was taken into account in the definition of the final network of walking and cycling infrastructure.

Chronologically, the first report considering only the touristic and recreational paths was published in [13], which contain only a review of their current network, without suggestions for its further expansion, possible obstacles and final benefits. But still, this report served as a basis for upgrading the current network towards higher continuity.

Also, in the analysis we used [14], which contains principles, recommendations and case studies for protected areas in Czech Republic, Hungary and Poland. Hence, we clarified general aspects of trail planning preparatory steps, integration into regional planning and factors influencing the trail design.

In [15] tourism development and sustainable trail development are comprised, in order to underline creation of a sustainable future. This strategy also serves to asses and review progress of the mountain biking and landscape changes. For us, it gave a very good direction for determination of the trail network, in order to be well defined, easy to access and suitable for cyclists and walkers and located in strategic places which have the greatest potential to support tourism.

Additionally, we complemented existing literature review using the research [16], in which a useful platform for the development of cycling tourism nationally and regionally in the UK learning from lessons in Europe (Germany, Netherlands, Sweden, Denmark) was provided. Here, also a challenge was analyzed if cycling tourism can support sustainable rural development in the UK, in order to increase the economic impact through tourism development. This served as a guideline for definition of specific recommendation for tourism and economy in our region.

Finally, the study from TFB [17] as a guidance for marking standards and traffic signing of the walking and cycling paths was used in our study [5]. Considering the concept of this paper, this part was not included here.

3. METHODS AND DATA

The method used for this analysis was the direct questioning of the inhabitants of the region. For that purpose, a questionnaire was created which included 17 questions (16 plus one question with comment), in order to obtain data for the potential of development of such network, the population support and their preferences. The main goal of the questionnaire was to determine the needs for sustainable transport/tourism of the local population and tourists.

A total of 1100 inhabitants were subject of the questionnaires in 9 municipalities in this region. This process in all municipalities was conducted at 30.05.2014, starting at 10 a.m. and lasting until all the questionnaire sheets for that municipality were filled up. The respondents were random by-walkers. For each municipality was assigned a different number of interviewers (who were students at TFB), taking into account the number of inhabitants, due to the equitable percentage representation of respondents.

The questionnaire refers to the common questions such as usage of sustainable ways of transport and the opinion of the respondents for the current and future infrastructure for sustainable transport/tourism (walking and cycling paths). The respondents who were tourists or weren't inhabitants of municipality didn't respond to the questions referring to the motivation of journey or weekly usage of sustainable forms of transport by themselves or by their families' members. All questions provided answers, except the last one where the respondents provided their own opinion as a brief comment on places of interest that should be integrated into walking and cycling routes.

4. DISCUSSION

4.1. Interpretation of the results from the questionnaire

After completing the questionnaire process, it was performed a very comprehensive work for processing the data from all answers. A total of 1100 questionnaire sheets were processed, considering that there wasn't any invalid questionnaire in terms of incompletely answered number of questions. The respondents were dedicated and conscientious answering all 16 (+1) questions, and not just the part of them. If such situation had occurred, students performing the interview had been previously warned to stop the interview with the current and to begin with other respondent.

The structure of the questions intended not to be answered by tourists doesn't have any influence or importance on the purpose of questionnaires and results for that particular question. Hence, during the analysis, the number of questionnaire sheets answered by tourists wasn't separated and specifically studied, meaning that the results are summed for all respondents without categorization (tourist or not).

The results had tabular and graphical representation for every municipality and total for the region. For the research purposes, only the most relevant results are presented. These results refer to the whole region and are presented in percentages.

Question 5: Do you use sustainable ways of travel?

From the total number of respondents in the South-western region, almost half, or 47% chose walking, 38% - bike, 5% rollers and 10% do not use any alternative way of transport. This percentage is significant because 90% from all respondents use a specific sustainable way of transport, which highlights the potential for further development of infrastructure network for sustainable transport.

Question 6: What is the motivation for the journey (by sustainable ways of transport)?

45% of the respondents use the sustainable ways of transport for recreational purposes, 21% for working, 16% for shopping, 12% for visiting, 6% use a bike, rollers or walking for other needs. Thus, according to the data, by category, the largest part from the population (45%) has recreational activities by sustainable transport; the other part (55%) conducts everyday obligations with this transport. This is an important aspect for achieving integration or continuity of infrastructure network for sustainable transport within and outside from the municipalities.

Question 9: What mean of transport do you use most?

Motor vehicles are the most used transport mean: 36% from the respondents use a car. Sustainable transport is most often used by 43% (23% walking, 20% cycling). The other transport means (scooters, taxi, public transport) are presented with less than 10%.

Question 11: How many bicycles does your family own?

15% from the respondents don't have a bicycle. The percentages of the families with one, two or more bicycles are almost identical (42% and 43%).

Question 13: For which purposes are you going to use that qualitative infrastructure for sustainable transport/tourism?

One fifth from the respondents will use that infrastructure for common mobility; 63% for recreation, and 16% for work travel. This means that higher part of the paths and their routes should be outside from the urban areas, according to the need for recreation of the respondents.

Question 15: Are you going to use the walking and cycling routes for recreation, if they are properly marked in the mountainous areas?

83% of the respondents will use these routes, which is a very high percent and indicator that the population is interested for recreation outside the municipalities, i.e., in the mountains of the South-western region.

Question 16: Do you agree with the idea for creation of cycling route in this region for extreme biking?

Above 80% of the population agree, except in two municipalities, where this percent is smaller (62 and 77% respectively).

To sum up, the population in the South-western region of North Macedonia use sustainable ways of transport (cycling and walking) mainly for recreational activities, and it is interested for creating expanded network of transport infrastructure which will support these sustainable ways of transport. Consequently, there is a potential for tourism development in the mountainous areas of the South-western region. Generally, when talking about tourism infrastructure for visitors in protected areas, particular precaution during the planning is necessary due to the high vulnerability of the natural values [4].

4.2. Planning and management of walking and cycling infrastructure

If tourism is managed well, it can contribute significantly to regional development, if not, it can have devastating effects on nature and society as well [4]. Having negative environmental impacts and contribution for degradation of destination sites, means that there is a need of an effective tourism management. Tourists seek unspoiled nature, landscapes and cities, healthy air and a comfortable climate. Therefore the damage from environmental deterioration may be felt more by tourism industry as by most other economic sectors [18].

The natural and cultural heritage of a region is the main motivation for a tourist's visit. The outstanding natural and cultural features of a region are those which make a place "special" – and worth a visit [4].

During the planning process of the cycling and walking network in the South-western region [5], the attention was put on the most significant natural and cultural heritages near which these paths should be passing by. Therefore, an expanded and continuous infrastructure network of cycling and walking paths was planned and proposed, including the numerous churches, monasteries, caves, landscapes and other attractive locations in every municipality in the most touristic region in North Macedonia. Hence, this analysis has made a big step towards complementing the transport-tourist infrastructure (Figure 1).

Providing trails for cyclists, walkers, hikers, horse-riders, climbers and other types of visitors is a key issue of protected area management. The whole network of paths in a protected area need to be carefully planned and monitored in order to achieve two goals [4]:

1. to keep the negative impacts of the trails and the visitors' activities on and along these trails to a minimum (acceptable) level;
2. to provide the visitors with an adequate infrastructure (the trails and related facilities) that allow for a meaningful nature experience according to the expectations of different visitor groups.

In general, two types of trails should be provided: normal trails that basically enable visitors to get around/to get to places of interest, and interpretative trails. They are an important opportunity to communicate with the visitor and, to certain extend, to influence his experience and behavior. Interpretative trails have many different purposes including information, education, recreation, safety and conservation of natural and cultural resources. The purpose of the modern interpretive trails in protected

areas is to inform the user of the ecosystem(s) for trail's location. They are a means of connecting with natural and cultural values and raising the visitor's awareness of environmental conservation issues [4]. For the South-western region both types of trails were included in the study [5].

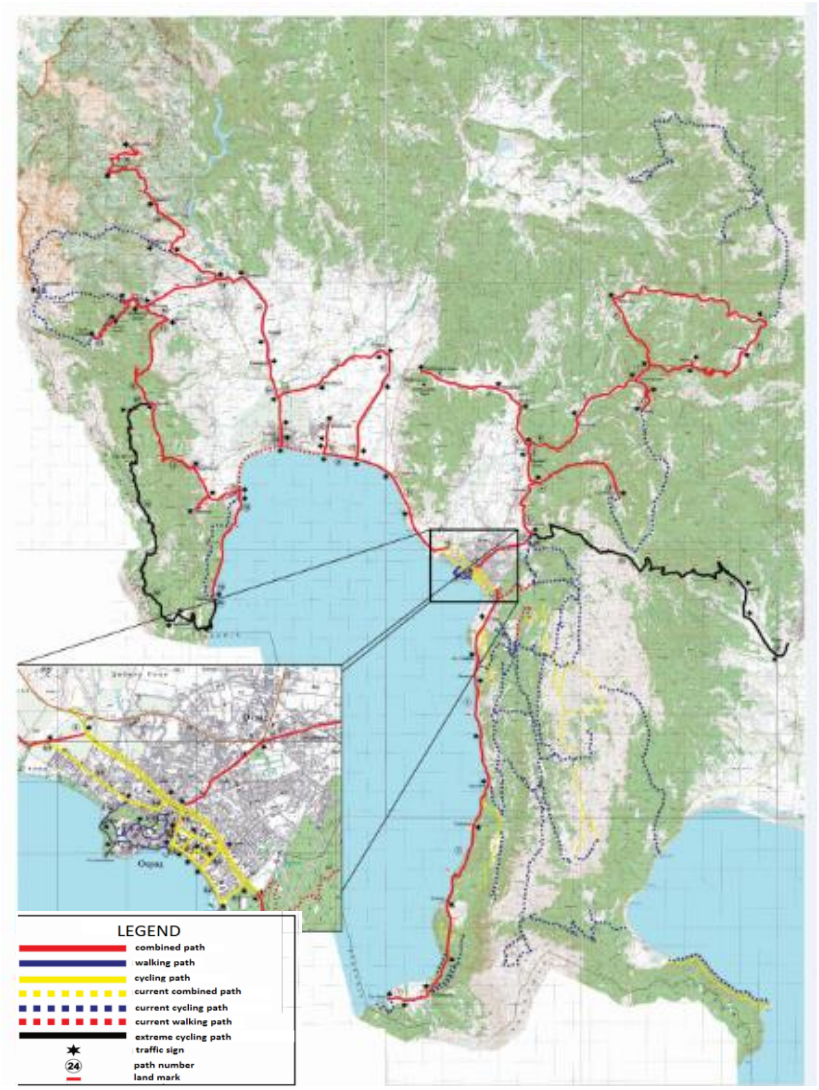

Figure 1. Cycling and walking paths for Ohrid, Struga and Vevcani, municipalities in the South-western region (Source: *Study for cycling and walking paths in the South-western region in Macedonia*, Faculty of Technical Sciences, Bitola, Macedonia [5])

Additionally, bike sharing system could be implemented as a mobility management measure in order to increase the visit quality. Research shows that making bicycles available to visitors would encourage cycling [19]. All the system's elements need to be well designed in order to provide a service capable of issuing basic but fundamental principles, such as autonomy, ease of utilization, user safety, and equipment security [20]. Bicycle mobility could be packaged as an additional tourist attraction through bike sharing, and could help to make visits to national parks as a sustainable tourism activity that allows more direct contact with the natural heritage [19].

4.3. Impacts from transport infrastructure

Tourism infrastructure is the basis of tourism development and utilization of existing destination resources [21]. Tourism whose emphasis is on fragile and sensitive areas need to undergo thorough evaluation to allow for appropriate level of development, type of activities, and access [2]. The analyzed

South-western region of the North Macedonia is a region with a protected area of high environmental concern.

The current and proposed infrastructure network for development of tourism in South-western region may have several associated environmental consequences. The most important transport impacts for the environmental issue of sustainability can be grouped into:

- impacts on landscape quality;
- partitioning of habitats and impacts on biodiversity (biodiversity loss);
- impacts on habitat quality due to impacts on water flows;
- direct land-use.

The actual impacts depend very much on the local circumstances and the number and nature of tourists. Whenever the negative impacts on the natural environment are dealt with, it should be considered that these impacts rarely affect only one entity, but usually affect ecosystems as a whole [4].

To provide the basis for tourism development not only in the present, but also for future generations, natural and cultural heritage, which are a habitat of many species, must be protected. Considering protection and making use of tourism development is a basic principle of sustainable tourism development. Hence, the negative impacts can only be managed effectively if they have been identified, measured and evaluated [4].

5. RECOMMENDATIONS FOR ACTIONS TOWARDS SUSTAINABLE TOURISM IN SOUTH-WESTERN REGION

South-western region in North Macedonia is the most touristic region in the country. Generally, there is a need of a debate on national goals for environmental quality and action considering tourism in North Macedonia. National authorities should made or initiate a wide variety of contributions towards making tourism more environmentally friendly and sustainable. In all areas of environmental concern, the measures taken should be sufficient to reduce the environmental impacts. Consequently, the future key goals must be [1]:

- setting of tourism-specific goals for environmental action;
- a more direct addressing of the key areas of environmental concern;
- impact assessments of the planned measures;
- a more environment-friendly product design on the part of providers of tourism services;
- greater support of the players at local level, and
- international commitment to a more environmentally sound tourism.

It is important to note that different stakeholders involved in the tourism business are responsible for implementation of different parts of the principles. Authorities, tourism businesses, local communities, NGOs and the tourists can all contribute to make tourism more sustainable. In order to achieve the goals of sustainable tourism, different actors should cooperate and stimulate each other to put the principles into practice [4].

Using experience from other developed countries [1, 16] the following recommendations have been identified not just for South-western region, but for the whole country, as a direction towards more environmentally sound tourism policy:

I. General recommendation

- defining the feasible national goals for development of sustainable tourism;
- defining the role and responsibilities of the national and local authorities, NGOs and community for appropriate utilization of resources.

II. Specific recommendation

- enhancement of nature-conservation and land management;
- reducing the environmental impacts of transport;
- linking the promotion of tourism to compliance with environmental criteria and conditions;
- promotion of environment- friendly forms of transport;
- highlighting the potential of tourism as an economic development tool;
- linking the generation of tourism income with the economy improvement;

- strengthening of tourism foreign policy;
- monitoring of goals, objectives and the program;
- research and vocational training for more sustainable tourism;
- active involvement of local stakeholders and communities;
- transparent information on social, environmental and economic interaction for improved policy-making and decision-taking.

Individual recommendations may, if taken separately, have negative environmental impacts. Therefore, an integrated approach is required for more sustainable and environment- friendly tourism.

5. CONCLUSIONS

Today, sustainable tourism is becoming increasingly popular worldwide. A proper sustainable transport infrastructure should be planned and built for its development. Undertaking a comprehensive research in the South-western region in North Macedonia, by using questionnaire at 1100 inhabitants, an expanded and continuous transport infrastructure for walking and cycling is planned and proposed. For development of this infrastructure, from one side, there is a good potential among interested population for using bike and walking, and natural and touristic attractions of the mountainous areas of the region from the other.

In parallel with infrastructure development, protection of the natural beauty and cultural heritage of the South-western region in North Macedonia should be conducted. Sustainable tourism is considered as an economic strategy, which is both worthwhile and dangerous in terms of exploitation of the environment.

The paper emphasizes the potential of increasing the competitiveness and popularity of sustainable tourism supported by sustainable transport infrastructure. At the same time it emphasizes the need to prevent environmental degradation in order to work toward an environmentally sound form of tourism. Also, the analysis supports the protection of the natural and cultural environment and ensures that tourism is developed in a way which is environmentally sustainable.

Hence, this paper should be viewed primarily as a proposal for giving structure to the recommendations for action towards sustainable development of tourism, especially in the South-western region in North Macedonia. Such recommendations are necessary and advisable, especially in terms of the future increase about the importance of ecotourism in particular. These recommendations will enhance and channel the benefits into the right directions, and avoid or mitigate the negative impacts as far as possible. The individual recommendations can achieve goals for sustainable tourism only through their interaction and appropriate coordination. However, the realization of proposed recommendations must be seen in a long time perspective.

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