

Carrying capacity assessment of Slovene Istria for tourism

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Abstract

The method of carrying capacity assessment has been found to be a useful tool for saturation prevention as well as for implementing sustainable tourism development strategies in Slovene Istria. It has been found that sustainable tourism development allows for variations in tourism development intensity in the region. The aim of sustainable tourism development is a long-term optimal use of tourism resources without negative impacts on the natural, social and economic environments.

The major constraints that will have to be considered if tourism development is to be sustainable are: waste water collection and treatment, lack of car parks, road and rail transport, sea water quality, potable water resources, solid waste disposal and management, and last but not least the dissatisfaction of the local community and tourists with tourism. The development of more accommodation facilities would not be reasonable without investments in general infrastructure facilities. Measures for increasing carrying capacity have also been suggested.

Keywords: carrying capacity, sustainable tourism, indicators, tourist destination, regional planning, geographical information systems.

1 Introduction

Today the development of tourism demands careful planning. The environmental impact of tourism is harmful and has frequently been uncoordinated with other users of the land. Moreover, the fragility of the environment has been seldom taken into consideration. Tourism development has been often led by individual investors who put profitability in the first place. To make the situation worse, this has been repeatedly done with complete disregard for tourism development



vision in a destination or region. Development potentials of the area have not been fully considered when planning economic development. Such tourism development can damage the reputation of a destination. Its long term damage can be felt in decreasing demand and uncompetitive prices of services as well as in increased pressure on natural and other resources. It can lead to devaluation of resources and dissatisfaction or even opposition by local community. In this way ample accumulation becomes impossible, consequently the present tourism offer cannot be complimented and it is not possible to introduce a new offer. As a result, the long term development of a destination is jeopardized. Cases of this kind can be frequently met all over the world, unfortunately and inevitably also including Slovenia.

In order to avoid such serious consequences, all tourism development potentials have to be periodically assessed on a level of the country, region and local community. To be able to do that we have to devise tourism strategy in due time in cooperation with the tourism industry, municipality, state and local inhabitants. The strategy has to be adjusted to changing circumstances in the area and economy. Only by doing so, a long term sustainable tourism development can be ensured in the region and country [1].

Prompt and integrated physical planning, which places the intervention planned in the strategy into the environment, is a key factor of sustainable tourism development. It has to involve the representatives of the tourism and other industries in the region, different experts, local inhabitants, state and local government. They have to communicate and negotiate in the process of drawing up legal documents and take into consideration the results of carrying capacity analysis for different activities.

Although the carrying capacity analysis (CCA) method has been used successfully throughout the world, it has not been established in Slovenia yet. Therefore I intend to illustrate its applicability in the process of implementing the principles of sustainable tourism in Slovenia.

2 Hypothesis

We intend to test the following hypothesis:

The carrying capacity analysis (CCA) method is a suitable tool for the prevention of saturation in a tourist destination as well as for the implementation of sustainable tourism development in a region.

The tourism industry which ignores the carrying capacity of the region in a long term jeopardizes its development or even existence and makes a negative impact on the overall development of the region. The hypothesis is going to be empirically tested in the case of Slovene Istria.

3 Method

World Tourism Organization (WTO) and United Nations Environment Program (UNEP) recommend that apart from wholesome physical planning in the region



and efficient tourist destination management we should make carrying capacity analysis for individual tourist destinations and areas [2, 3].

By making CCA for tourism we calculate the maximum number of visitors to a region or a tourist destination that can come at the same time without causing irreparable ecological and socio-cultural damage to the environment. The carrying capacity method recommended by UNEP has been slightly modified. The changes and supplements are considered to be necessary to make more adequate CCA possible in Slovenia and some other developed regions being compared. The analysis has been made by using computer assisted Geographical Information System (GIS) Idrisi [4]. The carrying capacity indicators for tourism specific to Slovene Istria that we consider most important have been determined on the basis of similar experiences abroad described in literature [5].

Firstly, the present capacity of individual carrying capacity indicators is going to be defined. Later on we are going to determine if appropriate measures can increase their capacity in the future. It is going to be done by comparing the current indicator capacity with the maximum carrying capacity limit for the chosen tourism development scenario by the year 2020. Both the planned and possible improvements in different development programs and strategies suggested by local inhabitants and tourists will be taken into consideration.

On the basis of assessed carrying capacity of individual indicators and taking into consideration the indicators that are at the lowest level in spite of the planned improvements, we are going to determine the carrying capacity of the region expressed the maximum number of tourists allowed to stay in the region at the same time. In the conclusion we are going to propose some measures that could be taken in order to monitor and increase the calculated regional carrying capacity for tourism and that will enable the implementation of the selected tourism development scenario by the year 2020.

After the sustainable tourism development scenario had been chosen we started the process of carrying capacity assessment of Slovene Istria. Relevant carrying capacity indicators for tourism have been determined and later divided up into three groups:

1. physical - ecological: beaches (sq m of beaches), sea water quality, potable water quality, solid waste collection and treatment, air quality and parks and green areas (quantity, condition),
2. infrastructural: accommodation capacity, potable water quantity, sewage disposal, road traffic, car parks, railway transport, sea transport, marinas and moorings and air traffic.
3. sociological - psychological: local inhabitant satisfaction with tourism and overall tourist satisfaction.

We did not follow the procedure found in literature and regrouped the indicators. The physical, ecological and infrastructural parameters or indicators were due to their importance in Slovene Istria divided into two groups: physical - ecological and infrastructural, comprising general and tourism infrastructure.

Inhabitant and tourist opinion polls suggest that they are highly sensitive to the condition of the environment and infrastructure. The next two groups of



indicators, socio-demographic and psycho-political were joined into one group called socio-psychological indicators.

Physical, ecological and infrastructural indicators are crucial in the process of defining the overall carrying capacity of Slovene Istria. Numerous examples of CCA for tourism in the world so far confirm that these factors are deciding with destinations in developed countries, Slovene Istria being one of them. In underdeveloped and developing countries it has been found out that socio-demographic and psycho-political carrying capacity indicators are more deciding.

The present carrying capacity of each indicator has been evaluated by using the following categories: not exceeded, unsustainable and exceeded. If it has been established that the indicator carrying capacity has not been exceeded, we used the category "not exceeded". It has also been defined whether it is possible to increase the capacity, and if it is, we listed the measures that may be used to increase the carrying capacity. For instance, the carrying capacity of accommodation capacity is "not exceeded", the annual average shows the 35% occupancy rate in the year 2003.

If it has been established that the carrying capacity on an indicator has already been exceeded, we used the category "exceeded". For instance, sewage disposal system as it still does not include all settlements in the region and cleaning devices do not allow for all phases of cleaning.

The category "unsustainable" has been used to describe indicators with a carrying capacity that has not been exceeded, but is nearing the carrying capacity limit or in the long term threatens the fragility of the environment in every sense of the word. For this reason we call attention to the measures that need to be taken as soon as possible to sustain their use in the long term. Such an example is sea water quality. If the complete sewage system for all settlements is not built in due time with all suitable cleaning devices, the water might become unsuitable for swimming.

4 Carrying capacity assessment

By analyzing 17 key indicators of carrying capacity in the region in order to develop sustainable tourism it has been established that: 5 indicators (29%) exceed the capacity limit, with 8 indicators (47%) the carrying capacity is unsustainable and 4 indicators (24%) do not exceed the capacity limit.

Carrying capacity has been exceeded in the following indicators: sewage disposal, car parks, road traffic, marinas and moorings and air traffic. It has been established that disposal of sewage is the weakest indicator. The current capacity of this indicator allows for no more than 18,000 tourists. In spite of the planned sewage system upgrade, the peak season capacity will not meet the requirements of the present maximum number of tourists, especially if we take into consideration both, registered and unregistered tourists. The project of sewage system building allows for the unexpected and expected increase of inhabitants and increased demands of the industry. The planned reserves would be sufficient for 29,200 tourists.



The next carrying capacity indicator is the lack of parking lots. In peak season we are currently short of 6,175 parking lots. By the year 2020 the number is expected to rise to 7,750 taking into account a mere 30% increase in the number of registered tourists. In high season demand exceeds the supply of car parking facilities everywhere and the problem presents a huge obstacle to accessibility. Multi-storey car parks have to be built in urban areas and car parks in the vicinity of junctions and public transport stations by the year 2020. However, the problem has to be solved together with the improvement of public transport. Such solution would be environmentally sound and it would result in the decrease of car parks needed in urban and tourist centers.

The third indicator is road traffic. It has to be stressed that the impact of road traffic on overall carrying capacity evaluation in a region is considerable. It has a negative impact on several indicators, such as car parks, air quality, the satisfaction of local inhabitants and overall satisfaction of tourists. Congestions become critical in high season, on holidays and at weekends. Apart from building highways we have to improve bus transport by introducing smaller coaches throughout the year and start passenger transport by the sea between our coast and towns of the northern Adriatic. The proposed introduction of tram or intercity rail connecting our coast with Italy and Croatia is a good but expensive idea. We must not forget cycling, an alternative means of transport mainly within and between urban areas.

The analysis has shown that infrastructure includes the most important limiting indicators preventing the sustainable development of tourism in the region. Marina carrying capacity in high season has been exceeded and the number of moorings throughout the year is inadequate. It leads to the fact that one day trippers in marinas moor their vessels in prohibited areas and pollute the sea.

The carrying capacity of antiquated airport is inadequate and it makes landing possible just for small, obsolete and noisy aircraft. Upgrading the airport would allow for modern quieter planes which would be most important due to its vicinity to an extremely fragile area around salt pans in Secovlje. Therefore we support modernization in concordance with impact assessment and propose limiting the volume of traffic by imposing high ecological taxes.

The sustainable development of tourism calls for measures which would improve the carrying capacity of presently inadequate infrastructure. Apart from this it is necessary to implement measures for increasing the capacity of indicators demonstrating unsustainable carrying capacity: beaches, sea water quality, solid waste disposal, parks and green areas, potable water quantity, railway transport, satisfaction of inhabitants with the effects of tourism and overall satisfaction of tourists.

First we have to ensure the adequate quantity of potable water and the substitute for the quantity lost because of possible disruptions in supply from Croatia. We also have to increase the capacity of water supply to provide uninterrupted supply in case of drought in peak season. The execution of the building plan for the accumulation in Padez would provide the quantities of potable water needed for the 30% increase in tourist arrivals by the year 2020.



The present way of solid waste collecting and disposing is unsustainable. A regional system has to be established, the plan was outlined in the Regional Development Program of South Primorska by the year 2007.

On the beaches the maximum standard of 10 sq m per swimmer has already been exceeded, on the other hand the minimum standard of 6 sq m per swimmer is likely to allow for the 30% increase in accommodation capacity projected by the year 2020. Most popular beaches tend to be overcrowded in high season. Natural beaches tend to be disorderly, but as they are also less crowded it would be possible to spread the tourist load to such areas. In this case it would be urgent to build ample facilities and introduce minimal measures for the protection of swimmers as well as the environment. The capacity of beaches can be increased by building swimming pools, at least one third of them should be indoors to be operational all the year round. Although one of the possible measures could be also to extend the coastline by building artificial lagoons, it has to be thoroughly investigated and the impact on the environment must be considered.

The quality of sea water is still within the criteria for swimming waters. However, in some places it occasionally does not meet the criteria or is nearing the limits of acceptable. In order to improve the quality of sea water it is urgent to improve the treatment of rain fall and the existing sewage system with cleaning devices.

The present railway transport is not efficiently used. The planned building of the second track will enable the use of faster trains and open the door to Slovene Istria for tourists from faraway countries. The areas covered by parks or other green areas have to be increased and not the other way round. In case they have to be built up due to the infrastructure it has to be done after a careful consideration and they have to be replaced afterwards. The region should distinguish itself as a cultural landscape where public and private green areas prevail and are used for outdoor recreation.

The negative attitude of local inhabitants towards tourism is caused by inadequate infrastructure in high season which has a considerable impact on the quality of life. In general mass tourism makes negative impact on the environment. The upgrading of infrastructure will undoubtedly improve the attitude of local inhabitants who should be also invited to take an active part in planning the tourism development. Local inhabitants should also get involved in tourism offer and be encouraged to start their own enterprise.

Tourists coming to Portoroz find accommodation in the resort satisfactory, which cannot be said for the rest of the offer in the destination. They miss variety in the events and entertainment offered, they think beaches should be in a better condition and that there should be more car parks available. They feel they should be better informed about the tourism offer. They are disturbed by noise in Portoroz. Service providers should cooperate when conceiving and carrying out projects. To put it in a nutshell, the management of a tourist destination should be more efficient. In 2003 the survey conducted in the high season in several coastal towns led to the same conclusion. This should be taken into account when planning the sustainable development of tourism in the whole region. We should try to maximize guest satisfaction in the areas where tourism is well



developed and avoid dissatisfaction of tourists in the areas where tourism is still to be developed.

The implementation of measures meant to maintain the present capacity has to continue. In addition, we have to start carrying out measures meant to improve the exploitation of capacities of the following indicators, with which the carrying capacity is not exceeded: potable water quality, air quality, accommodation capacity and transport by sea.

The proper quality of potable water is ensured by the cleaning device in Cepki and the implementation of security measures in the protected areas around the source of the river Rizana in the municipality of Koper. In some other areas water sources still need to be protected by taking precautionary measures.

Estimate of air quality is based on insufficient data since the monitoring of air quality has not been established yet. It should be done in the foreseen future to make it possible to take the measures for the prevention of excessive pollution in the region.

When it comes to accommodation capacities, we should first use the present capacities more efficiently and only after we have done so start thinking about the building of new ones. More emphasis should be put on the inefficient transport by sea which has to be developed by building suitable passenger terminals in transport centers in the vicinity of urban areas. We should particularly boost the development of ship transport between towns and tourist resorts in the northern part of the Adriatic sea.

The analysis of carrying capacity has shown that the region can presently accept the maximum of 18,000 tourists. The carrying capacity is limited by the indicator disposal of sewage, which has the lowest capacity. By building the sewage system and the cleaning devices planned to be finished by the year 2008 the carrying capacity of the region will increase to 29,200 tourists. However, this will not meet the needs of the maximum number of tourists in peak season, which amounts to a total of 33,750. According to this limitation the maximum number of tourists coming in the peak season should be decreased, especially if we want to deal with the sewage by the rules. This is the conservative scenario regarding the number of tourists, but it would improve the quality of swimming water and sustainable development.

5 Measures for carrying capacity implementation and monitoring

The assessment of carrying capacity of the region should be regarded as a tool to be used by tourist destination managers in order to plan and carry out the sustainable development of tourism in the region. It functions as guidance in making long term decisions as well as decisions taken on a daily basis. The process of carrying capacity analysis and its implementation play a very important role in education and make those who are involved in the process of tourism planning aware of the importance of sustainable development in the region.



Nevertheless, we have to be aware of the fact that the estimated carrying capacity is not fixed and does not determine the maximum number of tourists once and for ever. When the circumstances used to define it change and when we resort to appropriate strategic planning, we can increase the capacity and similarly it can be decreased by acting recklessly or by resorting to inappropriate tourism development. For this reason it is necessary to plan measures for the carrying capacity increase.

The most urgent measures for the increase in carrying capacity are as follows: the complementation of the existing sewage system, the improvement of public transport with special emphasis on transport by the sea, the construction of multi-storey car parks together with the prompt reaction to the lack of parking lots in critical areas, the provision of a supplemented quantity of potable water and encouragement of economical water and energy consumption, increase in the use of renewable sources of energy, selective collection of solid waste and recycling throughout the region, better care for public and private green areas, recycling water for irrigation systems, more diversity and better quality of tourism offer in the region.

In order to extend tourism offer over the whole year and to increase the occupancy of tourism capacities we should: build heated and indoor swimming pools, build various sports, recreational and entertainment facilities and start different activities, rebuild and promote old towns and villages and other cultural heritage, organize various cultural, entertainment, sports and recreational events throughout the year, create opportunities for shopping tourism, promote congress tourism, offer interesting excursions to towns, countryside and nearby tourist destinations, also by sea (Postojna cave, Lipica, Skocjan caves, Karst, Venice, Croatian Istria, etc) throughout the year, include protected areas into tourism offer, constantly improve tourism offer according to market trends (ecotourism, adventure tourism, active tourism...), create ecological brand for the whole region as a tourist destination.

The most urgent measures for the development of tourism in the countryside that would lead to good use of available resources in the whole region and complement littoral tourism offer are as follows: building accommodation facilities in the countryside, particularly by renovating the existing buildings that present local architecture, building the network of walking, cycling, riding and theme trails, reviving cultural heritage and inclusion of natural attractions, events and produce sales, offering various local specialties and wines, boosting the development of entrepreneurship in the countryside and educating local inhabitants and developing cross-regional cooperation in the countryside and within the whole region (Karst, Croatia, Italy).

Steps that have to be made in order to extend the season throughout the year and to develop tourism in the countryside are intertwined and produce a synergistic effect. By extending the season and expanding tourism over the whole region we would make a better use of a very expensive infrastructure which is currently fully exploited just in peak season. In this way we would also achieve its profitability. In this way we would also relieve the strain put on indicators by exceeding the carrying capacity limit and avoid the need to invest



in infrastructure. Simultaneously tourism income would be increased and tourism offer would be easier improved and complimented.

By offering various events and excursions we complement tourism offer and achieve satisfaction of tourist, extend their stay and in this way also the season. Spreading the tourist load over the whole region would reduce the number of tourists on beaches and on some roads, solve the problem of parking, sewage and as a result increase the carrying capacity of the region.

6 Conclusions

However, first we have to deal with the indicators where the carrying capacity limit is already exceeded or is unsustainable. At the same time we have to be aware of the fact that the investments are long-term and most local communities are not able to cope with them on their own. Government, EU structural funds and other investors (strategic partners, EBRD, World Bank) will be needed for the implementation of plans. Further investment in tourism infrastructure is recommended as it makes possible the quality improvement, the extension of the tourism season and better use of present accommodation capacities.

Only in this way we can develop sustainable tourism in accordance with physical, ecological, infrastructural, sociological and psychological capacity of the region.

A good use of GIS can facilitate the close monitoring of carrying capacity and such a system is much needed in every tourist destination. Apart from this, there should be also such a common information system for all service providers that would include a common reservation system, marketing and promotion of a destination. Needless to say, only such organization and equipment, together with well-qualified staff, would ensure that regional tourist offices manage a tourist destination efficiently and competently. To sum up, it is necessary to change the carrying capacity by improving the tourism destination management.

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