Renewable and Sustainable Energy Reviews ■ (■■■■) ■■■–■■■

Contents lists available at ScienceDirect

Renewable and Sustainable Energy Reviews

journal homepage: www.elsevier.com/locate/rser

Sustainable mobility for campsites: The case of Macchia Lucchese

Deny Del Moretto, Valentina Colla, Teresa Annunziata Branca *

Scuola Superiore Sant'Anna, TeCIP- PERCRO, Via Alamanni 13b, 56010 Ghezzano, San Giuliano Terme, Pisa, Italy

ARTICLE INFO

Keywords:
Campsite
Environmental Impact Study
Mitigation measures
Protected area
Sustainable mobility
Tourist train

ABSTRACT

The study concerns a part of the research work developed within the project GreenCamp, funded by the Regione Toscana and aiming at defining a model of sustainable management and competitive territorial campsite cluster. The main objective of the study was a sustainable mobility system for the customers of 3 campsites, located in a protected area, through the evaluation of the economic and environmental sustainability. In order to assess the connection between the 3 campsites and the coastal area as well as the nearby Regional Park of Migliarino, San Rossore and Massaciuccoli, two alternatives for a sustainable mobility have been assessed: a diesel-powered tourist train and an electric tourist train.

The comparison between the two alternatives has been carried out by an Environmental Impact Study, through the analysis of the main biotic and abiotic components as well as of the social-economic aspects. The results of the study depicted the strengths and opportunities of both solutions, by also taking into account some weakness and threats. Nevertheless, through some compensation and mitigation measures, both solutions proved to be viable.

Contents

* Corresponding author.
E-mail addresses: d.delmoretto@sssup.it (D. Del Moretto), v.colla@sssup.it (V. Colla), t.branca@sssup.it (T.A. Branca).

http://dx.doi.org/10.1016/j.rser.2016.02.012
1364-0321/

Please cite this article as: Del Moretto D, et al. Sustainable mobility for campsites: The case of Macchia Lucchese. Renewable and Sustainable Energy Reviews (2016), http://dx.doi.org/10.1016/j.rser.2016.02.012

1. Introduction

Over the past decades the need for a more systematic analysis of the role of innovation in the development of tourism has been ever more highlighted. Several analyses pointed out that the tourism sector shares many of the characteristics of innovation processes with other service sectors, including the intensity of the information requirements and the importance of the human factor. However additional features, although not unknown elsewhere, are particularly significant in tourism, due to a complex of related activities. For this reason the effects of innovation depend on the reactivity of the other elements of the whole system of services [1]. Tourism has social, environmental, cultural and economic effects and in economic terms can be treated as an industry. A better understanding of the complex nature of tourism, and of its connection with the environment is crucial for academic research. Some goals include the role of tourism in expansion of protected areas, the improvement in environmental accounting techniques and the effects of individual perceptions of responsibility in addressing climate change [2].

In order to achieve a successful connection between tourism and sustainable development, some prerequisites should be considered, such as the coordination of policies, the pro-active planning, the acceptance of limitations on growth, the education of all parties involved and the commitment to a long-term viewpoint [3]. For the assessment of tourism sustainability in terms of system quality, a practical and useful model has been developed, providing important contributions:

- To incorporate existing political, economic, socio-cultural and environmental impact studies and tourism service quality considerations into the sustainability assessment process, in order to improve the existing tourism impact and service quality studies;
- To provide data on tourism sustainability assessment in order to support stakeholders in decision making process;
- To present sustainability levels of tourism indicators;
- To encourage stakeholders to apply information in the process of tourism planning and development [4].

Due to the increased sensitivity to environment and sustainability topics, in recent years the environmental effects of tourism have been investigated and assessed in order to quantify the impacts of tourism activities, such as journeys, destinations, or sectors of the tourism industry. In particular, the most important factors that affect eco-efficiency are travel distance and mode of transportation, although sometimes it might be difficult to gather detailed data on transports, accommodation, activities, and revenues as well as indirect environmental impacts and economic multiplier effects. Nevertheless eco-efficiency could become an important tool for restructuring tourism in terms of sustainability [5]. A relevant example in this sense is provided in [6], where an analysis of the results of tourists' interviews in two international airports of Crete is provided, which clearly outlines their preferences toward hotels equipped with Energy Saving Installations (ESI) and Renewable Energy Sources (RES). Furthermore, tourists coming from countries characterised by a relevant energy saving awareness showed to be available to pay fee surcharges for these kind of hotels.

Tourism represents a sector of the economy that can contribute to the income but, on the other hand, can increase the energy consumption, with a consequent negative impact on the environment. In particular the tourism development can also lead to the increase of carbon dioxide (CO_2) emissions, especially in the long term [7]. For instance, [8] provides an exemplar analysis of the energy consumption and CO_2 emission of tourism industry of a province in western China, where the requirements of indirect energy and indirect emissions of CO_2 resulted higher than the total energy consumptions and total CO_2 emissions. In addition the energy intensity has a negative effect on the increase of CO_2 levels.

Particularly transportation in the tourism sector represents a significant contribution not only to energy consumption but also to CO_2 emissions, mainly due to the increased demand for energy. On this subject, an investigation of the long-run equilibrium relationship among international tourism, energy consumption and climate change has been done in the south of island of Cyprus. The study has shown that the international tourism has a catalyst role both for energy consumption and for climate change in the long term for the Cyprus economy [9].

Furthermore it is very important to investigate residents' perceptions of tourism impacts as well as the relationship between them and some predictive variables, such as the role of tourism in the local economy and the personal welfare. Both positive and negative consequences include, on one hand, economic categories (e.g. tax revenues, increased jobs, additional income, inflation) socio-cultural ones (e.g. increased intercultural communication and understanding, increased crime rates) and, on the other hand, environmental categories, such as protection of parks and wildlife, air, water and noise pollution, vandalism and wildlife destruction [10].

In recent years, due to the international crisis, low-cost tourism approach has been rediscovered, in particular the open-air tourism. Nevertheless, although open-air tourism, such as campsite, has traditionally been considered a low-cost choice, recently a new style of camping has arisen, which, compared to traditional models, combines a higher quality of services and comfort with the respect for the environment [11]. The new trend for the camping management aims at achieving a competitive development of the camping services, in order to answer to the challenges of the market and of the society. In addition innovative and advanced quality of campsites can answer to the demand of new guest segments [12].

The study presented in this paper has been funded by the Regione Toscana within a call for projects aiming to innovate the regional touristic products in order to support the competitiveness of Tuscany (Italy) while respecting the sustainability of tourist flows. The funded project *GreenCamp* aimed at defining a model of competitive and sustainable management of campsites and vacation villages, that are located in a protect area, the Migliarino San Rossore Massaciuccoli Regional Park. The goal of the project is to define a possible implementation of the territorial cluster model of tourism enterprises and a possible dialogue between technology platforms of the cluster and the regional platform of the Tourist Observatories of Destination (Osservatori Turistici di Destinazione (OTD)).

Previous examples of research programmes focused on coastal quality have shown how research can support decision-making and sustainable development to reach environmental and socio-

Please cite this article as: Del Moretto D, et al. Sustainable mobility for campsites: The case of Macchia Lucchese. Renewable and Sustainable Energy Reviews (2016), http://dx.doi.org/10.1016/j.rser.2016.02.012