



Sustainable performance index for tourism policy development

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ABSTRACT

Development of sustainable tourism policies could be a useful way of encouraging new forms of business, increasing employment and promoting the conservation of landscapes; in this regard, the application of the European Charter for Sustainable Tourism in Protected Areas represents a referential methodology for local development and a possibility to involve local stakeholders in the definition of sustainability policy. In many cases, integrated sustainability indicators are developed within a participatory process; the present study represents an innovative attempt to evaluate sustainability holistically, by defining specific targets through the definition of indicators suitable to measure and evaluate the temporal evolution of development policies, mainstreaming sustainability to reduce adverse effects on the environment and promoting conservation of local and traditional values. Application of sustainability indicators to measure welfare and development at local scales is strategic to evaluate the short and long term effects of strategies developed through the European Charter participatory process.

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1. Introduction

Sustainable tourism and ecotourism are widely recognized as means of enhancing local development as well as protecting natural environment and traditional and cultural heritage in international resolutions (Carta di Rimini, 2001; Lisbon Strategy, 2000; The renewed EU Tourism policy, 2006; Agenda for a sustainable and competitive European Tourism, 2007; Lanzarote Charter, 1995; Quebec Declaration on Ecotourism, 2002; Convenzione delle Alpi, protocollo Turismo, 1991) and scientific studies (Bimonte & Punzo, 2003; Dallari, 2002; Franch et al., 2007; Godde et al., 2000; Milne & Ateljevic, 2001; Neto, 2003; Wells, 1997). Moreover, the implementation of participatory processes of environmental governance is recognized as useful to address complex sustainable development issues and for planning local strategies of development (European Commission, 2001; van der Hove, 2006; United Nation Economic Commission for Europe UNECE, 1998; White, McCrum, Blackstock, & Scott, 2006), especially when it is integrated with a scientific analysis of the situation (Behringer, Buerki, & Fuhrer, 2000; Stirling, 2006). The consultation of local stakeholders and their involvement in the definition of strategies for development, indeed, helps to highlight new perspectives about local situation and to assure that all the priorities of different actors and

their opinion about possible measures of intervention are well-known and taken into account for the evaluation of scenarios and the definition of a strategy for local development (Logar, 2010; Stagl, 2006; Tosun, 2000).

The attempt to measure sustainability has to face some conceptual challenges: 1) the concept of sustainability is not univocally defined and efforts to measure it are difficult to implement (Bell & Morse, 1999; Butler, 1998; Hardi & Zdan, 1997); 2) sustainability is not a universal concept, it may be influenced by local environmental, social and economic contexts which may require more attention to be paid to specific aspects over others (Bell & Morse, 2003; Ko, 2005; Reed & Doughill, 2003; Twining-Ward & Butler, 2002); 3) legal compliance is not enough to define a sustainable model of development and, in many cases, is difficult to achieve. Furthermore, the challenge posed by the evaluation of a mid-long term process of local development is two-fold, seen in: 1) the need to find new methods for measuring local levels of development and quality of life, overcoming the evaluation of mere economic indicators such as GDP (Blackstock, McCrum, Scott, & White, 2006; Common & Stagl, 2005; Daly & Farley, 2004; Dymond, 1997) and 2) the need to evaluate temporal evolution of these policies, adopting instruments that enable decision makers to investigate the effects of the strategy adopted for local development and to compare the situation before and after its implementation (Connell, Page, & Bentley, 2009; Dovers, 2005; Grosskurth & Rotmans, 2005; OECD, 2009).

This paper describes the experience of the implementation of a participatory process of local development (i.e. the European

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Charter for Sustainable Tourism in Protected Areas, 1995) in a marginal area of the Lombardy Region of Northern Italy as the starting point for the definition of new methodologies and indicators of sustainability in order to evaluate the actual impact of sustainable tourism development policies in marginal areas. Firstly, the paper describes the process of implementation of European Charter, as set by Europarc; secondly, it explores some theoretical implications deriving from the need to assess sustainability of local development processes and to define tools able to support the definition of policies (integrating objective, subjective and strategic analysis of the area and of its priorities) and to monitor their impacts through time; thirdly, a new index developed by authors for the evaluation of sustainability of local development policies in tourist destination (the Sustainable Performance Index - SPI) is described; finally, a case study is presented, in order to explain more in detail the methodology of the Sustainable Performance Index.

2. The European charter for sustainable tourism in protected areas

In 1995, Europarc (the European Federation of Protected Areas, that represents 500 members responsible for the management of more than 400 protected areas across the continent) took the initiative to set up the *European Charter for Sustainable Tourism in Protected Areas (1995)* with a project funded by the EU's LIFE programme and led by the *Fédération des Parcs Naturels Régionaux de France*.

The European Charter for Sustainable Tourism in Protected Areas is an innovative planning instrument aimed at enhancing sustainable tourism in protected areas, cited also by the Report of the Sustainability Group of the *EU Community (2007)* as an interesting model for strengthening the relationship between protected areas and local tourism interests. Park authorities (signatories of the European Charter) are committed to implementing local strategies for sustainable tourism, enhancing cooperation and implementing joint actions with local partners.

The European Charter process combines economic, cultural, social and environmental aspects as a basis for the definition of future scenarios of local development. The phases of the Charter include: economic, social, cultural and environmental diagnosis of the area in question, with a focus on specific characteristics, strengths and weaknesses; participatory processes engaging local stakeholders; participatory planning; definition of action strategies for sustainable tourism development and, ultimately, implementation of these strategies. The consultation process is designed to improve collaboration and capacity building between local stakeholders, both in the public and private sectors (Castellani, Lombardo, & Sala, 2007).

The process of implementation is planned to last 7 years: the first two years being assigned to the development of a strategy of action for sustainable tourism, the remaining five years for the implementation of that strategy. At the end of every phase there is an evaluation by Europarc: the first (after two years) is for the award of the Charter Certificate to the protected area and the second (at the end of the 7th year) for the evaluation of results and the renewal of Charter membership.

It is important to note that the strategy for sustainable tourism must be based on both the results of analysis of local contexts (environmental, economic and social factors in relation to the tourism sector) performed by experts, and the results of the consultation and planning process conducted with local stakeholders.

The whole process is inspired by ten principles, listed in the Charter text, which form the basis of the definition for the action strategy.

According to these principles, the aim of the process is the development of new models for tourism related to protected areas, whilst protecting the natural environment and granting benefits and a good quality of life for local residents.

3. Methodology

The methodology presented in this paper was specifically developed and implemented by the authors to address and support the implementation of European Charter for Sustainable Tourism in Protected Areas in marginal areas of the Lombardy region, starting from the guidelines provided by Europarc.

The process of implementation of the European Charter is a local development management system focused on sustainable tourism. The process is inspired by the Deming cycle (Deming, 1994) within a continuous quality improvement model consisting of 5 phases:

1. economic, social, cultural and environmental diagnoses, to highlight the objective strengths and weaknesses of the territory;
2. consultation of local stakeholders, to compare objective results with a subjective and common perceptions of the local situation;
3. participatory process of planning;
4. production of a strategy for sustainable tourism development, linked with an action plan based on the results of previous phases;
5. overall evaluation of the strategy and planning of improvement actions.

It is important to check the whole process and to verify that the actions planned for the development are targeted to the specific pressures identified and shared by all stakeholders. Indeed, effective policy planning for sustainable tourism development has to be based on an analysis of actual and potential environmental, social and economic conditions and on the needs of local communities and enterprises (Hezri, 2004; Rydin, Holman, & Wolff, 2003).

Furthermore, the implementation of the strategy planned has to be monitored over time to assess impacts on the local environment and, where appropriate, to redefine policy and plan future steps to be taken in order to continuously improve the environmental and sustainability performance of the area (EU Commission – Tourism Sustainability Group, 2007; EU Commission, 2005; Ko, 2001).

It is therefore essential to identify indicators suitable to measure and evaluate the temporal evolution of development policies (Hezri & Dovers, 2006; Oras, 2005; Singh, Murty a, Gupta, & Dikshit, 2009; Waldron & Williams, 2002) and to assess the possibility of sustainable socio-economic development facilitated by the promotion of sustainable tourism activities in marginal areas.

3.1. Instruments suitable to measure welfare and development

Since the 1970s, certain economists have highlighted the shortcomings of economic indicators (e.g. GDP) as instruments for measuring the development and level of welfare of a State or a local community (Daly & Cobb, 1989; Daly, 1996; Lawn, 2003; World Bank, 1997). Since that time, alternative methods of measure have been defined - for example satellite accounts integrated with national accounting and specific indexes of sustainable development such as the Environmental Sustainability Index (ESI) (Esty, Levy, Srebotnjak, & de Sherbinin, 2005) and the Environmental Performance Index (EPI) (Esty et al., 2008), the Index of Sustainable Economic Welfare (ISEW) (Castaneda, 1999; Cobb & Cobb, 1994) and the Genuine Progress Indicator (GPI) (Anielski & Rowe, 1999).

One of the objectives of the present study is to analyse opportunities provided by this field of research with the aim of identifying a method suitable to measure actual levels of development in disadvantaged areas (classified as “areas facing structural difficulties” by the European Community: see EC Council Regulation 1260/1999) and trying to integrate classic economic evaluation with an assessment of social and environmental factors, with a particular reference to the definition of sustainable tourist strategies as a way to promote local sustainable development.

An analysis of the situation in Italy regarding dataset availability in national and regional statistics (i.e. the set of data needed to calculate GPI or ISEW) highlights the unavailability of such data at local scales (almost all data are at national or regional scales) and the unfeasibility of performing a specific investigation at the municipality level – already underlined in some studies on GPI applications at the regional scale (e.g. Clarke & Lawn, 2007) and in reviews on the strengths and weaknesses of sustainability indicators (e.g. Mayer, 2008; Ness, Urbel-Piirsalu, Anderberg, & Olsson, 2007; OECD, 2002).

Nevertheless, there are lot of studies performed all around the world to measure the role of sustainable tourism in promoting welfare and development at local scale through the use of sets of indicators (Coccosis & Parpairis, 1996; Garcia & Staples, 2000; Inskip, 1991; Miller, 2001; Sirakaya, Jamal, & Choi, 2001). Indeed sustainable tourism indicators are widely recognized as a useful tool for: 1) evaluating policies and monitoring performances (Butler, 1998; Crabtree & Bayfield, 1998; EU Commission – Tourism Sustainability Group, 2007b; Gahin, Veleva, & Hart, 2003; Kelly & Baker, 2002); 2) defining strategies for development and setting numerical targets (Bakkes, 1997; Stoeckl, Walker, Mayocchi, & Roberts, 2004); 3) easily communicating the current situation and future scenarios to all the stakeholders (Hammond et al., 1991; OECD, 2009; Smeets & Weterings, 1999).

The debate about the relation between science and policy in the selection of indicators suitable to measure the sustainability of local development (McCool & Stankey, 2004; Reed, Fraser, & Doughill, 2006) highlights the necessity to have indicators of sustainability based both on scientific criteria and on the results of participatory processes of policy planning. The selection of sustainability indicators is therefore both a technical and political decision and has to be focused on the identification of issues that are relevant and valid for the evaluation of social, economic and environmental local systems (Deconchat et al., 2007; Ohl et al., 2007; Munda, 2005; Redman, 2004).

A comprehensive analysis of sustainability performance of tourist destinations at local scales assessed via a suite of indicators suitable to measure welfare and development at that scale and to evaluate both the short and long term effects of development policies, should fulfil the following requirements (Miller & Twining-Ward, 2005):

- integration of different aspects of sustainability;
- involvement of stakeholders in the definition of priorities of action for local development;
- consideration of the local situation, focusing on the analysis of specific factors;
- evaluation of the temporal evolution of sustainability performance, enabling decision makers to assess the effective impacts of the policies undertaken.

3.2. Sustainable performance index

3.2.1. Definition of the set of indicators

Considering that the current sets of sustainability indicators often meet only some of the requirements listed above, a new integrated index of sustainable development was developed with

the aim of ensuring a comprehensive evaluation of sustainability performance, focused on local situations and measurable over time.

The Sustainable Performance Index (SPI) is an integrated index composed of 20 indicators concerned with: demographic dynamics; economic and social conditions of local communities; environmental factors; tourism characteristics of the region under investigation. The selection of indicators composing the final index is based on the results of every aspect of the European Charter procedure as follows:

1. Objective analysis of local situation:

- economic, social, cultural and environmental diagnosis of the area (Castellani, Gusso, Lombardo, Sala, & Pitea, 2007), highlighting the most critical issues for the area.
- assessment of the Tourism Carrying Capacity of the destination (Castellani, Sala, & Pitea, 2007), to identify natural resources that are scarce or could be scarce following a significant growth in tourists and public and environmental services that could limit accessibility for tourists or cause environmental damage.

2. Consultation of local stakeholders (subjective analysis):

- topics emerging from the vision were developed by local stakeholders through an EASW workshop (European Commission, 1994). This part of the consultation was aimed to add subjective information about the identification of the main drivers that could lead to a sustainable or unsustainable tourism development in the area.
- results of a thematic focus groups with local stakeholders, interviews with local actors and surveys, to integrate objective analysis of the situation with local perceptions about what constitutes the priorities of intervention to promote the development of the area as a sustainable tourism destination.

3. Planning process for sustainable tourism development in the area (strategic analysis):

- the ten principles inspiring the European Charter (see Section 2) provides directions for the identification of priorities for development.
- the strategy for sustainable tourism arising from results of previous phases that defines the main areas of intervention and the priorities for the future - to be set by local administrators according to stakeholder consultation and the analysis of the area.
- the diagnosis of the area and the assessment of Tourism Carrying Capacity (TCC), summarized in an SWOT analysis (see Section 2 for more details), which is a first step towards the selection of topics that need to be evaluated to assess the sustainable performance of the destination.
- the results of one-to-one interviews with relevant actors inside and outside the area, which are strategic for the planning of the destination (e.g. provincial and regional representative of environmental and tourist offices, ecotourism tour operators).

The process of selection developed for SPI is an attempt to balance the need to have a comparable method of evaluation with the need to assess the effective needs of local situation. The process refers to the frameworks developed by some important European projects about sustainability assessment in rural and mountainous regions, such as the DIAMONT (Schönthaler et al., 2008) and MARS (Schoder et al, 2005) projects. The aim is to identify a comprehensive set of indicators, based on objective and subjective priorities of the area, addressed to the specific trends of regional development. The conceptual model for the process of selection is illustrated in Fig. 1. The technical analysis of the area provides objective information about the local state (from an environmental, economic and

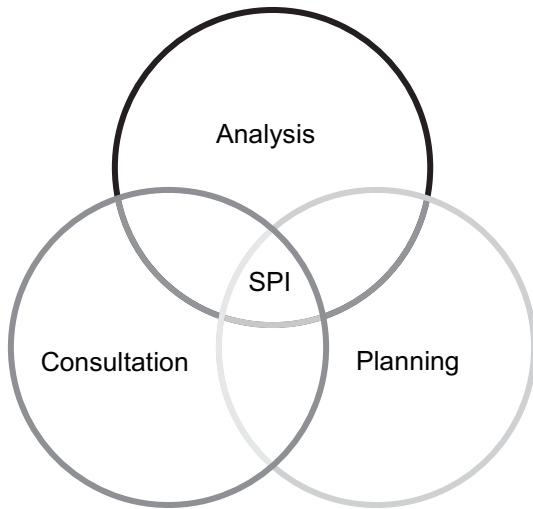


Fig. 1. Conceptual model for the selection of SPI indicators.

social point of view, with a focus on tourism aspects) and an evaluation of future perspectives, based on the TCC assessment. Consultation with stakeholders provides additional subjective information, enabling one to select the most important aspects and to assign different levels of priority to them; the planning phase, based on the outcomes of the previous steps and involving local communities, local administrators and scientific experts, defines the field of action for the future and is important for identifying the issues that have to be monitored to assess the success of development policies. Thus the indicators composing SPI are indicators of current sustainability arising from analysis and consultation steps, and indicators that measure the achievement of the development policies planned.

3.2.2. Sustainable performance index assessment

Sustainable Performance Index value is the sum of the values of these 20 indicators:

$$SPI = \sum_{i=1}^{20} I_i \quad (1)$$

Though composite indicators can be misleading if poorly constructed and can involve subjective evaluations (e.g. about weights), the decision to aggregate the data together to produce a performance index comes from the consciousness that composite indicators can help to measure multi-dimensional concepts (as sustainability) that cannot be captured by single indicators. Furthermore, the aggregation of results in a single score can help decision makers to understand the overall performance of the tourist destination and to compare the performance of different areas.

To enable every decision maker (e.g. local administrators) to apply the model to a specific area and to use the results to address local policy, for every indicator composing the index, a dedicated sheet is created that provides some basic information about it (e.g. name, year, source of data, extent and periodicity). The model is flexible, so it can be adjusted to the specific situation of the area under evaluation: it is possible to assign a different weight to each indicator, according to the priority of action emerging from the analysis and the consultation of local stakeholders. Even if this intervention will necessarily bring subjectivity into the selection process, it is important that the selection of indicators takes into account local priorities. The only requirement that is strongly needed to ensure robustness to the final index is that the assignment of

weights is done in a transparent way, justifying the choice of the weights according to objective, subjective and strategic analysis performed before the selection of indicators.

In this case study presented below the same weight is assigned to every indicator, assuming that every issue has the same relevance for the area under evaluation.

Every indicator can assume a value from 0 to 10, which represents the level of sustainable development assessed for that issue (10 indicates the higher level of development). If the relation between the value of the issue and the value of the indicator is in direct proportion (e.g. “level of education”: if the level of education is high, the sustainable performance is high), then the value of that indicator is calculated by equation (2); if the relation between the value of the issue and the value of the indicator is, on the other hand, in inverse proportion (e.g. “urbanisation”: if the level of urbanisation is high, the sustainable performance is low), then the value of that indicator is calculated by equation (3). Equations for the calculation of indicator values, starting from the value of every issue are:

$$I_i = \frac{S-s}{V_i-v_i} \times x_i + S - \left(\frac{S-s}{V_i-v_i} \right) \times V_i \quad (2)$$

$$I_i = -\frac{S-s}{V_i-v_i} \times x_i + S + \left(\frac{S-s}{V_i-v_i} \right) \times V_i \quad (3)$$

I = indicator

S = maximum value of the indicator scale (10 in the present study)

s = minimum value of the indicator scale (0 in the present study)

V = maximum value of the scale for the considered issue

v = minimum value of the scale for the considered issue

x = value of the issue measured.

A special case is represented by the issue of “tourist overnights”, in that it is difficult to assign an absolute positive or negative meaning (and so to choose between the direct or inverse proportion equations) to the amount of tourist overnights; the presence of tourists in a destination has a positive effect on local development (especially for local economy and labour market), but if the amount of tourists in the destination is too high, it can have a negative effect on the quality of the environment (e.g. air pollution, production of waste, etc.) and on the quality of life of local people (e.g. crowding, traffic, noise, etc.) (Cullen, Dakers, & Meyer-Hubbert, 2004; Eagles, McCool, & Haynes, 2002; Manning, 2002; Moore & Polley, 2007). For this reason, the indicator “tourist overnights” is calculated by equation (2) up to a specific threshold of sustainability ([nr of overnights/day]/residents \times 100% lower than 25%), and by equation (3) when the value of the issue is over this threshold. The threshold was defined subjectively, considering the specific characteristics of Alpi Lepontine (see below) as a tourist destination. Analysing the local situation and context, the ratio between residents and tourists shows that tourism is not the main economic sector and that the hospitality and infrastructure system is not exclusively dedicated to tourism activities. Hence in this context, the main sustainability object is to maintain a balance among several economic sectors, such as agriculture, retail and manufacturing.

Reference values for establishing maximum and minimum value ranges for every issue are determined through comparison with national or regional mean values.

Finally, the results of the evaluation of each indicator are added to obtain a composite evaluation of the Sustainable Performance of every municipality [1]: the mean SPI value for the municipalities involved represents the value of SPI for the entire area considered.

4. Area of study

The case study presented in this paper is the implementation of the European Charter for Sustainable Tourism by the Alpi Lepontine Mountain Community (Italian Mountain Communities are administrative clusters of municipalities in mountainous areas). Alpi Lepontine is an area of mid-high altitude in the Lombardy Region in northern Italy. It can be divided into two different sub-areas: the first one consists of municipalities near Lugano and Como lakes, with high tourist flows and high levels of urbanisation; the second consists of other municipalities in a more marginal mountainous area, where there are only a few villages of low population density and a lower level of tourism development.

There are two protected areas candidate to the European Charter, both managed by the Alpi Lepontine Mountain Community, which is a union of 13 municipalities. These protected areas applied to the European Charter in 2006 and have been awarded with the Charter certificate in 2008.

The activity started in September 2006, when the project staff held an opening meeting in the Visitor Centre of the Riserva Naturale Lago di Piano for the presentation of the process to the population and for a first analysis of local perceptions about sustainable tourism and local development. During the meeting a workshop regarding the perception of local threats and trends; according to the EASW method was performed: participants were asked to list five threats and five opportunities about tourism in the area of Alpi Lepontine in order to develop two possible scenarios – one positive and one negative – for the next ten years. The results of the workshop were then clustered to identify the main topics of tourism in the Alpi Lepontine, linked with the European Charter principles.

The vision developed in the first meeting addressed the selection of some topics for the planning process, discussed in 4 roundtables. Roundtables consisted of four categories of stakeholders (tourism business, local administrators and NGOs, school operators and farmers and trade associations), with the aim of allowing the definition of shared proposals and to create a network of subjects sharing the same goals, as asked by stakeholders in the first meeting. On the basis of this structure, the main topics of the planning process were handled by the roundtables, in relation to the fields of action and the needs of participants.

Members of the project staff also conducted one-to-one interviews on specific topics with relevant subjects of the area, such as provincial tourism and environmental authorities and representatives of local organizations.

Furthermore, during the process of analysis, questionnaires were submitted to tourists, tourism operators and local people to investigate opinions about protected areas (both present and potential situations) in the Alpi Lepontine region.

5. Results

The main results of the diagnosis of the territory, performed within the process of the European Charter for Sustainable Tourism in Protected Areas, and further developed by the study about Tourism Carrying Capacity of Alpi Lepontine, are summarized in Table 1, which illustrates the results of an SWOT analysis of the local situation regarding natural and cultural heritage, socio-economic contexts and tourism. The main threats to the area relate to the impact of tourism on the natural environment (manifest in crowding, pollution, urbanisation, etc.), whilst the main opportunities are connected to the development of 'lighter' forms of tourism: "green holidays" for school tourism, bicycle trails, mountain excursions and other nature based activities.

Table 2 lists the main topics emerging from the vision developed by local stakeholders, which provided subjective information for SPI indicators selection. The main topics highlighted by the local community in the Alpi Lepontine region are "mobility" (which suggests that traffic congestion could be a problem for the area and that sustainable mobility has to be promoted) and "valorisation of local strengths", especially of natural, traditional and cultural heritage, which is linked with "environmental protection".

The set of indicators identified for the Alpi Lepontine area, selected according to the method explained in Section 3.2 and illustrated in Fig. 1, are listed in Table 3. It consists of indicators regarding social, economic and environmental aspects that have been identified as main drivers (according to the DPSIR model of analysis) for sustainable tourism development in the Alpi Lepontine area; a more comprehensive evaluation of future perspectives of sustainability could be obtained by combining SPI evaluation with a more detailed assessment of the ecological balance of tourism activities in the area, done, for instance, using the Ecological Footprint method applied to the tourism sector and the Biocapacity assessment of the destination.

Table 4 shows the results of the application of the SPI method in the Alpi Lepontine area. The mean value is 74.41: it is quite low result, considering that the highest result achievable is 180 (it should be 200, arising from the value 10 for each of the 20 indicators, but in this case for two out of the twenty indicators data were not available). The result seems to confirm the classification given by the ex-ante evaluation of the European structural fund (Regione Lombardia, 2004).

The analysis of the value for each indicator considered allows for an SWOT analysis to be performed, supported by quantitative data – thereby overcoming the limits of a simple qualitative approach. According to these results, the main strengths of the Alpi Lepontine area are urbanisation, the ecological state of fresh waters, net migration and per-capita value added, while the most useful information given by SPI analysis in support to decision making about tourist development in Alpi Lepontine is to address future tourist policy to the development of tourism in the whole area, spreading its positive influence also to small villages and preserving more developed tourist centres from overexploitation.

The SPI method can also give relevant information about each single unit composing the area considered (in this case the municipalities) allowing one to deepen the analysis and to highlight the disparities among them.

In the present case study, the whole area has reasonably homogeneous results (see Fig. 2), even if comparing the SPI analysis of a mountain village (e.g. Cavargna) to a more developed municipality (e.g. Porlezza), as shown in Figs. 3 and 4, it is possible to highlight the disparities between these two different situations and to identify their strengths and weaknesses, as information to support development policies of the Alpi Lepontine Mountain Community.

Cavargna, as with most mountain villages, shows a lack of public services (including public transport) which leads to the ageing of the local population and to migration, especially of young people (due also to the limited job opportunities); nevertheless, it has good SPI rates connected with urbanisation, which is very low ($I_{13} = 9,63$), and the organic farming rate, which is very high ($I_{17} = 9,52$). The two strengths identified could be used for the valorisation of the village through the promotion of tourism, especially agritourism, and the retail of local products: currently the village of Cavargna doesn't have any tourist structure and therefore doesn't register any overnights, but, as suggested by SPI analysis, and by scientific literature (see, among others, Baetzing, 2005; Frechtling & Horvath, 1999) sustainable tourism could be a good instrument for the sustainable development of the local

Table 1
SWOT analysis of Alpi Lepontine as a tourist destination.

	Strength	Weakness
Natural and cultural heritage	<ol style="list-style-type: none"> 1. Natural value of protected areas 2. Existence of an organized system of local museums 3. Riserva Lago di Piano: protected area with organized paths and facilities for visitors 	<ol style="list-style-type: none"> 1. Difficulties in reaching some museums and the protected areas by public transport 2. Few people available for managing the services, so that some museums have to be opened only when one visit is booked 3. Urban degradation near the borders of Riserva and presence of Regina national road (that generates pollution and noise) close to the area 4. Lack of signalling, especially for Area di rilevanza ambientale
Socio-economic context	<ol style="list-style-type: none"> 1. Rich and wide historic and cultural heritage 	<ol style="list-style-type: none"> 1. Lack of services in mountain villages 2. High level of commuting from Italy to Switzerland 3. Lack of cooperation between operators for the promotional activity
Tourism	<ol style="list-style-type: none"> 1. Wide tourist offer based on local heritage (nature, history, culture) 2. Connections with Como Lake and Switzerland. 3. Length of stay in the territory higher than provincial average. 	<ol style="list-style-type: none"> 1. High seasonality 2. Concentration of tourist in areas near the lakes of Piano and Lugano (some municipalities doesn't have any hospitality structure). 3. Lot of information available only in Italian 4. Hospitality structures not organized in network 5. Lack of agritourism and B&B structures 6. Low availability of connections by public transport (especially for mountain area).
Natural and cultural heritage	<p>Opportunities</p> <ol style="list-style-type: none"> 1. Special projects focused on agriculture (creation of a local brand, benefits for conservation of agricultural environment) 2. Enlarging of environmental education activities 3. Valorisation of local products of mountain pasture. 4. Development of activities about guided excursions 	<p>Threats</p> <ol style="list-style-type: none"> 1. Human pressure on protected areas 2. Dropping of agricultural and forest activities that causes loss of identity of the areas 3. Lack of cooperation between public administrations about heritage management 4. Hydrogeologic accidents and fires due to the lack of maintenance in mountain and agricultural areas
Socio-economic context	<ol style="list-style-type: none"> 1. Valorisation of agricultural production through new forms of marketing 2. Valorisation and development of environmental, historical and cultural heritage 3. Improvement of rural tourism 4. Information and communication technologies as a support for local community and enterprises. 	<ol style="list-style-type: none"> 1. Aging of population 2. Marginality of local protected areas in the national contest 3. Evolution of tourism towards mass tourism instead of tourism of quality
Tourism	<ol style="list-style-type: none"> 1. New markets: United States, European countries currently not present and Italians from outside Lombardy, school tourism, sport and nature-based tourism 2. Promotion in IAT of Como 3. Adhesion to national and international ecotourism networks 	<ol style="list-style-type: none"> 1. Impact of tourism on ecosystems 2. During summer months, competition between tourists and residents in using local services (especially water and waste disposal) 3. High density of tourist facilities on the territory

economy and society. Porlezza, on the other hand, is quite a developed municipality, with higher rates of services, public transport and employment in respect to the whole area, but is still limited regarding the number of tourists staying in the area (especially during the summer season) and the level of urbanisation (due in part to the presence of second houses); it also shows a very low rate about organic farming. In this case, consequently, the main suggestions for decision makers, arising from SPI analysis, are: encouraging the re-use of existing buildings as tourism structures to avoid the construction of new buildings for tourist purposes, and promoting organic farming and the production of local products as an additional tourist attraction.

In conclusion, the SPI analysis of the Alpi Lepontine Mountain Community produces the following guidelines to address policies for sustainable tourism development by local decision makers. These are summarized in the action plan for sustainable tourism submitted to Europarc Federation by Alpi Lepontine Mountain Community (Tarelli, Castellani, Leoni, & Sala, 2008):

- To fill the gap between mountain villages and the municipalities in the plain area, e.g. supporting the activities that can attract people in the mountain (as using abandoned mountain huts and mountain pasture structures for tourist accommodation and creating points where tourists can taste

and buy food products coming from local farming); improving the quality of services in mountainous municipalities (frequency of bus service, public services for local people and tourists).

Table 2
Main topics emerging from the vision developed by local stakeholders.

Topic	Nr of votes
Problems of mobility	25
Valorisation of local strengths	20
Environmental protection	19
Promotion of tourist information and communication about the territory	15
Quality of tourist offer	12
Urban planning	11
Valorisation of local heritage	9
Promotion of tourist path and routes	9
Tourism facilities	9
Order and neatness	7
Training for tourism operators	6
Environmental training and consciousness	5
Prices	4
Promotion of local products	2
Maintenance of drainage system	2

Numbers of votes indicates the number of participants to EASW workshop that voted that topic as a driver for tourism development in the area.

Table 3

Set of indicators for SPI assessment in Alpi Lepontine area.

Population	Housing	Services	Economy and labour	Environment	Tourism
1) Net migration	4) Rate of houses not owned from resident people	5) Nr of local unit in services sector	8) Employment rate	13) Urbanisation	18) Overnights
2) Old-age index		6) Voluntary work	9) Nr of enterprises with ISO 14001 or EMAS certificate.	14) Production of energy from renewable sources	19) Nr of b&b and agritourism/total nr of hospitality structures
3) Level of education		7) Nr of daily routes of public transport	10) Rate of new enterprises survived after 18 months from birth	15) Ecological state of fresh water	
			11) Female entrepreneurship	16) % of separate waste collection	
			12) Rate of commuting population	17) % of farming area occupied by organic farming	
			20) Per-capita value added		

- To encourage local entrepreneurship, especially among young people, to reduce the dependence on Swiss jobs and to reduce commuting: as highlighted by SPI analysis, sustainable tourism could be a good solution for this purpose, especially in mountainous areas. Possible actions in this field could regard public funding for the start up of tourist enterprises by local young people (possibly in cooperation with the local high school for hospitality and tourism).
- To assure good quality of life for local people, e.g. improving and innovating public services and reducing the impact of tourism activities on the area (especially about environmental pollution, noise and crowding).
- To promote and improve sustainable mobility services, which could help to prevent overcrowding as well as noise and air pollution, especially in the tourist season. Considering that tourists reported that one of the main reason for visiting the area is the possibility to play sports and visit natural sites, the promotion of bicycle routes and of a bike-sharing service seems to be an interesting area of intervention for the destination under investigation.
- To support the strengths of the region, with specific attention paid to the safeguarding of local natural heritage and protected areas: e.g. by the promotion of guest accommodation, agritourism and organic farming and the improvement of separate waste collection.

6. Discussion and conclusions

The methodology of European Charter for Sustainable Tourism in Protected Areas presented in this paper suggests that sustainable tourism projects may help to promote local sustainable development of mountain areas and that the Charter is a useful mechanism for involving stakeholders in the planning process. Indeed, the European Charter procedure meets the necessity of widening the concept of participation, from pure consultation to active involvement of local stakeholders, both in the planning process and in the implementation process; it can help to make an overall evaluation of environmental, social and economic contexts of the area, whilst also considering the perception of the local community. Furthermore, the methodology developed for the implementation of the European Charter in marginal areas (starting from the experience of one mountainous area in Italy), closely related to the conceptual model developed for the SPI assessment, allows to identify the objective, subjective and strategic key points during the whole process.

From this perspective, the application of sustainability indicators at a local scale, such as the Sustainable Performance Index, is a promising tool for addressing the definition of lines of action for local development and evaluating the short and long term effects of strategies developed through the participatory processes of the European Charter method. Furthermore, sustainability indicators

Table 4

Results of SPI analysis in Alpi Lepontine.

	B. Lario	Carlazzo	Cavargna	Corrido	Cusino	Grandola	Plesio	Porlezza	San Bartolomeo	San Nazzaro	S. Siro	Val Rezzo	Valsolda	Alpi Lepontine
1 Net migration	6,67	7,51	1,75	6,49	9,02	8,09	7,61	7,34	6,36	5,42	6,37	4,96	5,81	6,41
2 Old-age index	8,95	9,14	3,38	9,52	0,91	7,72	4,45	8,79	6,96	4,03	5,19	2,98	5,69	5,98
3 Education	1,37	2,66	1,97	3,67	0,82	3,96	0,26	2,94	1,04	0,75	3,94	1,44	5,36	2,32
4 Second houses	6,95	6,43	3,81	6,34	3,63	5,81	2,09	6,40	4,41	3,67	4,99	5,38	4,00	4,91
5 Services	3,87	4,97	2,54	1,10	1,53	5,21	3,23	7,53	3,04	0,48	0,48	2,76	3,01	2,89
6 Voluntary work	6,20	6,20	6,20	6,20	6,20	6,20	6,20	6,20	6,20	6,20	6,20	6,20	6,20	6,20*
7 Public transport	10,00	2,56	1,00	3,36	2,07	4,91	0,44	5,81	1,91	1,51	2,96	0,38	1,30	3,29
8 Employment rate	4,57	7,44	2,41	6,05	4,24	6,13	4,42	6,80	5,47	5,73	4,60	4,04	4,37	5,10
9 Environmental certification	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	5,26	0,00	0,00	0,00	0,40
10 Surviving of new enterprises	–	–	–	–	–	–	–	–	–	–	–	–	–	n.a.
11 Female entrepreneurship	4,48	4,48	4,48	4,48	4,48	4,48	4,48	4,48	4,48	4,48	4,48	4,48	4,48	4,48*
12 Commuting	2,08	1,28	6,70	1,67	4,39	2,18	2,79	1,77	2,56	2,41	3,86	3,50	3,53	2,98
13 Urbanisation	9,09	6,71	9,63	8,52	9,52	8,51	8,86	6,78	8,68	9,37	8,13	9,52	8,92	8,63
14 Renewable energy	–	–	–	–	–	–	–	–	–	–	–	–	–	n.a.
15 Ecological state of fresh water	7,50	7,50	7,50	7,50	7,50	7,50	7,50	7,50	7,50	7,50	7,50	7,50	7,50	7,50*
16 Separate waste collection	1,62	1,50	2,51	1,53	1,33	2,17	4,01	1,13	1,67	1,68	1,43	1,52	2,37	1,88
17 Organic farming	9,57	3,56	9,52	0,13	0,01	4,56	0,00	0,13	0,00	0,00	0,00	0,76	1,85	3,34
18 Overnights	0,00	5,56	0,00	0,00	0,00	1,58	1,03	8,54	0,00	0,00	1,63	0,00	1,58	0,79
19 Guest accommodation	0,00	2,50	0,00	0,00	0,00	4,29	0,00	0,00	5,00	0,00	2,50	0,00	0,00	0,83
20 Per-capita value added	8,47	5,57	5,57	5,57	5,57	8,47	8,47	5,57	5,57	5,57	8,47	5,57	5,57	6,46
SPI	91,39	85,56	68,97	72,13	61,23	91,77	65,84	87,71	70,85	64,04	72,73	60,99	71,52	74,41

Please note that data for I₁₀ and I₁₄ were not available and data signed with *refers to the whole Province of Como.

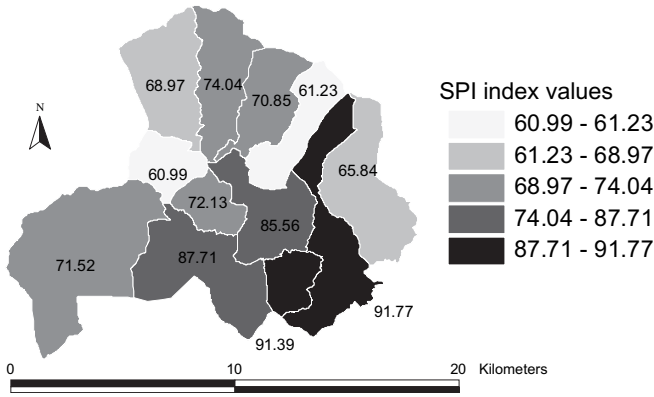


Fig. 2. Map of SPI results in Alpi Lepontine municipalities.

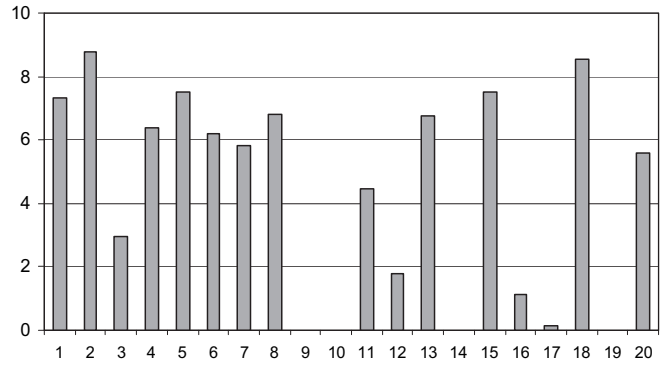


Fig. 4. Example of SPI results: municipality of Porlezza. Figs. 3 and 4 show two examples of SPI scores for two municipalities (Cavargna and Porlezza): numbers on x-axis represents the indicators composing SPI (as listed in Table 3); y-axis shows the score (from 0 to 10) of each indicator for the municipality.

and their evolution through time could represent a useful tool for decision makers to assess policy efficacy in defining models of sustainable tourism, particularly in marginal and transforming areas. The SPI method allows to assess current levels of sustainable development in the area under evaluation and is a valuable instrument for the assessment of the positive potential of that area. The fact that the methodology for the identification of the set of indicators is strictly related to an existing and widely implemented procedure (the European Charter guidelines and principles developed by Europarc) helps to standardize the whole process, enabling researchers and decision makers to compare results through space and time (which is one of the requirements identified by EU Commission for sustainability indicators, 2005).

The attempt to define a methodology for the definition of a sustainable tourism development indicators set that can be easily shared by practitioners working in different situations and that incorporate stakeholder participation, answers to some of the most important challenges identified for sustainable tourism indicators research (Klaric et al., 2003; Miller and Twining-Ward, 2005; Pinter et al., 2005; White et al., 2006).

Moreover, the final SPI value allows to comprehensively evaluate the sustainability performance of the whole area considered, while the results of the single indicators composing SPI allows to deepen the investigation at the level of municipalities and to identify possible inequalities between them. It would be therefore possible to assign a different weight to each indicator, according to the development priorities of the specific area under consideration, as identified by local decision makers, or highlighted by the process

of consultation with local stakeholders. The strong relationship between the local situation (local policy for development, analysis of the perception of local community) and the process of selection of the indicators and the evaluation phase is the most useful characteristic of SPI method; although it makes the index less comparable to other international standardized methods applicable at national level (for example GPI, ISEW or EPI), it prevents the unfeasibility of application at local scales (e.g. in the case of a lack of local data) and helps to find solutions that are shared by local communities and targeted to specific priorities. In fact, the SPI assessment meets both the necessity to ensure the connection with local policies and local features and the need to ensure repeatability in different context and comparability through space: the connection with European Charter procedure, which is applicable to protected areas all around Europe (and, potentially, all around the world) ensure repeatability and comparability, while the conceptual framework underlying the selection of indicators in the SPI method, thank to its linkage to policy targets, to objective key issues and to stakeholders priorities, is applicable for all areas under evaluation and allows to adapt the evaluation to different situations, taking into consideration local priorities and features.

Furthermore, the strategic analysis included in the conceptual framework for the selection of indicators illustrated in Fig. 1, ensure the link with existing policy targets and priorities and the reference to the local institutional and political context, answering to the need of a stronger connection between indicators development and strategies development should be strengthened, pointed out by Pinter et al. (2005), recognizing that current sets of indicators often show a political weakness and finally result to be only an addition to existing environmental, economic and social statistics.

At the same time, the objective analysis, and particularly the Tourist Carrying Capacity assessment, provides an evaluation of “what to sustain” and “to what extent” (Pinter et al., 2005) to achieve sustainable development in the area under evaluation. In addition, the authors made an effort to develop indicators that have a close reference to official statistical data systems, with the aim of improve data availability (at present and in the future) and comparability through space.

Finally, the presence of a transparent framework, that involves also stakeholders, for the selection of indicators help decision makers and stakeholders to easily understand the process and to negotiate the selection of indicators when appropriate, in a perspective of adaptive monitoring and management over time. In the case of SPI evaluation, the review of indicators selection can be coupled with the periodic review of sustainable tourism strategy planned every five years according to the European Charter procedure.

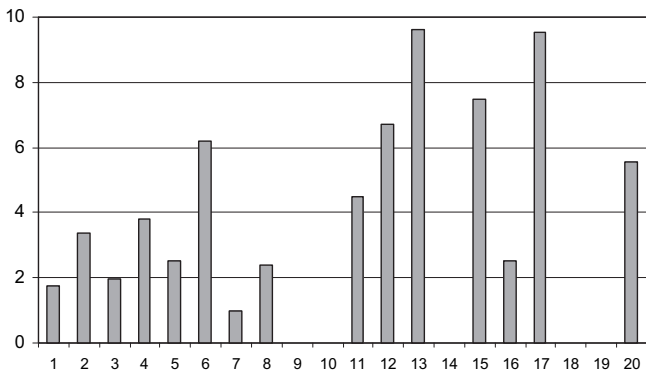


Fig. 3. Example of SPI results: municipality of Cavargna. Figs. 3 and 4 show two examples of SPI scores for two municipalities (Cavargna and Porlezza): numbers on x-axis represents the indicators composing SPI (as listed in Table 3); y-axis shows the score (from 0 to 10) of each indicator for the municipality.

Further development of methodology should be the validation of the model, with the aim of highlighting the role of each issue considered, to investigate the possibility of compensation between the scores of different issues (e.g. environmental and economic aspects) in the final comprehensive evaluation. The assessment at local scale, indeed, can be performed also analysing single aspects in detail, but, if you want to compare the scores of several areas, you have to be aware of the role of single indicators in defining the final result, to avoid giving unreliable information to decision makers (OECD, 2008).

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