

## Calculating the glocal impact of sustainable tourism: the Satakunta Region in Finland\*

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### Abstract

Tourism has been one of the fastest growing industries globally. Research on its economic impact has become established during the past half century. Similarly, the impact of tourism-related activities and behaviors on the environment has become a key area of research. Our focus in this study is on some relevant features of both aspects. We concentrate on the evaluation of the economic impact of tourism, and consider the sustained value-creation effects on local-global continuity in terms of the average numbers of foreign and domestic tourists coming to the region. We propose a simple relative indicator that adjusts calculations of the economic impact of tourism on one region to account for the ecological strain attributable to the means of travelling. As such, this indicator alone is insufficient to assess the sustainability of tourism in the region. However, as our long term research goal we suggest that it should be included in the wider system of sustainability indicators. There is clearly a need for more research that would validate our sustained value-creation system in other local conditions.

**Key words:** economic impact, glocal, sustainable tourism, sustainability indicator

## Introduction

The total income generated by tourism is about 11 percent of GDP in the OECD countries, making it one of the fastest growing industries on the global level. The employment effects are significant, given the labor-intensive nature of the business (OECD 2010). Studies on its economic impact have constituted one of the main streams of research in tourism in the last 50 years (Frimodig 1959; Eriksson & Wikström, 1961).

Earlier research on the economic impact of tourism tended to neglect the aspect of sustainability. The global Tourism Satellite Account (TSA) is a statistical accountant framework in the field of tourism that measures goods and services according to international standards in terms of concepts, classifications and definitions. This allows valid and consistent comparisons from country to country ([http://ec.europa.eu/enterprise/sectors/tourism/cooperation/tourism-satellite-account/index\\_en.htm](http://ec.europa.eu/enterprise/sectors/tourism/cooperation/tourism-satellite-account/index_en.htm)). TSA does not include sustainable tourism, however. Nevertheless, the ecological impact of tourism-related activities and behaviors both locally and globally has attracted major research effort recently. Transport-related activities in particular affect the ecological footprint of tourism at a destination, largely attributable to the dominance of air travel. (Doinicar, Laesser & Matus, 2010.) The tourism sector has been late in recognizing the importance of supply-side definitions of this complex phenomenon. It was as late as 2000 when the United Nations Statistical commission approved the adoption of tourism satellite accounts (TSA) as a method of measuring this sector of the economy (Cooper, Fletcher, Fyall, Gilbert & Wanhill, 2005). According to Cooper & al., TSA could be considered a 'technical' supply-side definition, and they refer to Leiper (1979, 400) for a conceptual or descriptive definition: "The tourist industry consists of all those firms, organizations, and facilities, which are intended to serve the specific needs and wants of tourists".

Our aim in this study is to balance the equation of the economic impact of tourism on local-global continuity. We use the term 'glocal' to refer to the connections or relationships between global and local businesses. Svensson (2001) was one of the first researchers to introduce the terms "glocal strategy" and the "glocalization" of business activities in an attempt to enhance the consistency in usage by scholars and practitioners of the term global strategy and the phenomenon often described as the globalization of business activities. We assess the average numbers of foreign and domestic tourists coming to a region in order to trace the global air-traffic burden that falls upon it. This will enable us to estimate the extent to which local tourism revenue depends on local production and consumption, which is presumably more sustainable than tourism dependent on long-haul air traffic, and complies with environmental norms to a greater degree.

At the end of the 1990s Garrod and Fyall (1998) noted an upsurge of interest in the concept of sustainable tourism. Hunter (1997) suggested defining it as an over-arching paradigm incorporating a range of approaches to the tourism/environment system within destination areas. In a more recent study, Castellani and Sala (2010), referring to Bell & Morse (2003) and Ko (2005; Reed & Doughill, 2003; Twining-Ward & Butler, 2002), make no attempt to define sustainability as a universal concept, and rather consider the varying influence of local environmental, social and economic contexts that may require varying levels of research attention.

Karppinen et al. (2012) in their study of its economic impact refer to the few commonly accepted general features that describe tourism (Burkart and Medlik 1974). Assessment of its economic effects is therefore not a trivial task, not least because of the lack of comprehensive and comparable definitions (Vanhove 2005). Empirical and theoretical research on tourism is heterogeneous, and this also applies to practical regional-development project reports and accounts. Because nearly all regions have tourism at the core of their development strategies, there is an emergent need to build up consistent knowledge-creation practices. Following the reasoning of Karppinen et al. (2012), we offer no exhaustive definition of tourism in this study, but consider it in line with international statistical conventions. Hunter (1997); Doinicar, Laesser & Matus, (2010) and Castellani and Sala (2010) have introduced the concept of economic, social/cultural and ecological sustainability into the literature on tourism. We aim to contribute by suggesting a systematic definition of sustainable tourism in response to Hunter's (1997) demand for a comprehensive paradigm covering different approaches at destination. In the following section we assess the research gap and explore sustainable tourism indicators, which are based on the measurement of the regional economic effects.

### **Assessing the research gap**

Karppinen et al. (2012) emphasize the need for local facts about the economic realities in specific regions in development projects focused on the tourism industry. Castellani and Sala (2010) point out the role of sustainable tourism policies in encouraging new forms of business, increasing employment, and promoting landscape conservation and local development. They developed an index for evaluating the sustainability of local development policies at a tourist destination (the Sustainable Performance Index – SPI) in a marginal area of the Lombardy Region of Northern Italy. Hunter and Shaw (2007) propose the wide adoption of ecological footprint (EF) analysis as a key environmental indicator of sustainable tourism (ST). EF analysis provides a global perspective on sustainability that, according to Hunter and Shaw (2007), is absent in locally derived and contextualized ST indicators. Miller's (2001) Delphi surveys revealed considerable disagreement about "sustainability": there were contrasting views on the use of qualitative versus quantitative indicators, and on the role that consumer pressure can play.

By way of a theoretical implication, Castellani and Sala (2010) conclude that integrated sustainability indicators measure welfare and development on a local scale. This was the starting point in our study, and in line with Karppinen et al. (2012) we see tourism as an industry in which the right allocation of a region's resources may influence its attractiveness. The research gap we have identified, and therefore the justification for this study, is that, first, although the importance of sustainable tourism is widely acknowledged, the most commonly used measure of its economic impact, TSA (Tourism Satellite Accounts), does not take environmental aspects into account.

Second, given that Hunter and Shaw's (2007) ecological footprint (EF) concentrates on global aspects, whereas Castellani and Sala's (2010) integrated index focuses on sustainability on the local level, we aim to combine the global and the local. Our objective is thus to develop a hybrid measurement device for assessing the impact of sustainable tourism, and to explore indicators that take into consideration both local and global aspects. In line with Stiglitz, Sen ja Fitoussi (2010), among others (<http://www.stiglitz-sen-fitoussi.fr/en/index.htm>), we doubt

the meaningfulness of indexes measuring sustainability, and propose instead a simple relative indicator that adjusts calculations of the economic impact of tourism to a particular region. The idea is to incorporate the ecological strain of the means of travelling. As such, this indicator is insufficient in itself for assessing the sustainability of tourism in the region. Nevertheless, we propose that it be included in the wider system of sustainability indicators.

### **Sustained value creation from a glocal perspective**

In earlier research on sustainable tourism Ryan (2002) relied on both stakeholder theory and value-add-on theory, whereas Saarinen (2006) discusses resource-, activity- and community-based traditions of sustainability on a local scale. Miller (2001) questions the relevance of customer satisfaction, staff training and environmental awareness to the measurement of progress towards sustainability. Ryan (2002) also suggests that ‘sustainability’ is insufficient as an objective, and that ‘sustained value creation’ could be borrowed from the management literature. Managers within tourism should be looking at added value for environments, communities, entrepreneurs and tourists in accordance with the ethical objectives outlined in the World Tourism Organization’s *New Global Ethics for World Tourism* charter adopted in 1999 (Ryan, 2002). Karppinen et al. (2012) also acknowledge the value-creation aspect of tourism, which seems to have a panacea status in regional development. As mentioned above, tourism plays a key role in the development strategies of practically all regions (Karppinen et al., 2012).

Miller (2001) discusses the issue of equity, and wonders whether it is part of the drive for sustainability, or simply an “add-on” that only serves to confuse the debate and weaken the significance of the term. One might well question the value of an indicator that is an acknowledged simplification of a complex issue. Should we use indicators that cannot provide us with a complete picture even if the partial image is an improvement on what is currently available? The sustainable-tourism indicator explored in this study is based on the measurement of the economic effects of tourism on the regional level (Karppinen et al. (2012). In this we follow the tradition of Frimodig (1959) and Eriksson and Wikström (1961), originally with regard to Sweden. Our calculation of sustainability also takes account of the global aspect, presented in EF analysis (Hunter & Shaw) as an indicator of environmental sustainability. EF analysis allows quantitative comparison between different impact components (e.g., the transit zone and the destination area), and can give an indication of the overall ecological effect of tourism products on global biological resources. Miller’s Delphi survey identified the need for ST to focus on the long term, although there is little agreement on the kind of policies that should be followed over this time period. Consequently, there is disagreement on the extent to which qualitative measures are appropriate.

The primary purpose of the study conducted by Karppinen et al. (2012) was to construct a simple model framework for the assessment of annual tourism income and employment on the regional level. The criteria were the following: it should be relatively easy to update, and should give sufficiently reliable estimates of the practical information needs of the interest groups involved in regional tourism development. The model estimates the direct and indirect effects of tourism on the regional level. The modeling procedure is based on regional economics and tourism research, and the context is the Satakunta Region. Regional applications require some calibration. Furthermore, as Hunter and Shaw (2007) emphasize, in developing

a regional income indicator of tourism's global footprint we considered the transit zone and conducted further research on the application of EF analysis to tourism using different modes of transport to the destination, for example. Our model, which can be characterized as an indication of ecological footprint, also allows exploration of domestic tourism activities.

## Results - An income indicator for sustainable regional tourism

Karppinen et. al (2012) suggest a procedure that generates regional-level information about income and employment. The relevant economic measures include regional revenue in euros and person-years in the tourism industry. The pilot version of the procedure was tested by Karppinen and Vähäsantanen (2011) in the Satakunta Region (NUTS3). In the following we present the calculation (1) for deriving the direct and total effects of tourism from short-term forecasts

Direct (*D*) private sector tourism income  $TI_h^D$  for region ( $h =$  Satakunta Region) is calculated as follows:

$$TI_h^D = \sum_i^n \sum_j^m \alpha_i X_{jh} \quad (1)$$

where

$\alpha_i$  = share of revenue generated by tourism concerning tourism-related product  $i$ ,  
 $X_j$  = total tourism revenue in the industry  $j$ .

Karppinen et al. (2012) also calculate direct employment in tourism in the Satakunta region. We would also have used it as an indicator of the social dimension of tourism on the regional level in this paper, but did not do so because we only consider the impact of sustainable tourism on glocal income.

Given the lack of updated data on industry-level interdependence in the Satakunta region, we did not disaggregate direct income from tourism to different industries, but instead calculated the aggregate multiplier. This captures both the indirect and the induced effects, as explained in Karppinen et al. (2012). On account of leakages from the regional economy, the result of the multiplier effect is the sum of the geometrical series, and the multiplier in its general form can be presented as follows\*:

$$k = A \left[ \frac{1}{1 - [B * C]} \right], \quad (2)$$

where

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\* The multiplier is explicitly introduced in Karppinen & Vähäsantanen (2011, 56-59). The general introduction of the Keynesian multiplier effect is explained in many macroeconomics text books. Corresponding multiplier models specifically concerning tourism are used in many basic text books on tourism that emphasize quantitative methods (e.g., Ryan 2003, Vanhove 2005, Tribe 2011).

$A = (I-L)$  = share of direct income from tourism that remains after the first-round leakages (L),

$B$  = share of income from the consumption by local entities (residents, firms and local public sector) of locally produced goods and services.

$C$  = share of local consumption of entities that increase local income.

Since regional multiplier effects are always region- and model-specific, Equation (2) needs to be calibrated to the case of Satakunta in the case of tourism (see Karppinen et al. 2012, where  $k = 1.37$  with a maximum of 1.7 and a minimum of 1.03). Further, the total tourism income ( $TI_h^T$ ) for the Satakunta region can be expressed as follows:

$$TI_h^T = k_h TI_h^D \quad (3)$$

Once we repeat the above calculations yearly, and there is a statistical publication lag of over 15 months in practice, the forecasted values are needed for the use of practitioners. Let us denote in Equation (4) industries ( $j$ ), which are typical for tourism, by superscript *tour*. The preliminary values for direct income and employment effects at time  $t+1$  ( $t$  = the latest statistical year) are calculated as follows:

$$TI_{h,t+1} = \bar{\chi}_{t+1}^{tour} TI_{h,t}, \quad (4)$$

**where**

$$\bar{\chi}_{t+1}^{tour} = \frac{1}{m} \sum_{j=1}^m (\chi_{j,t+1}^{tour}) \quad \text{and} \quad \chi_{j,t+1}^{tour} = \frac{X_{j,t+1} - X_{j,t}}{X_{j,t}}.$$

In other words, the preliminary value of direct income from tourism in the Satakunta region for one year following the latest statistical year is calculated as a product of the average growth in net sales in typical tourism industries at time ( $t+1$ ) and direct income based on the latest available statistics and the income model constructed above. Further, the preliminary total tourism-related income (in Equation 3) at time ( $t+1$ ) in the Satakunta region is obtained by exploiting the multiplier introduced earlier and the preliminary direct effects.

Let us assume that there is no significant difference between what tourists consume in the destination area and in the country of origin. In terms of sustainable tourism, the main difference comes from journey length and travel mode, particularly air travel (see Hunter & Shaw 2007). In Finland (a peripheral country) and its provinces these features can be captured from information on overnight stays (OS) of foreigners (F) relative to total overnight stays in all types of accommodation (A) (i.e. EF indicator).

Let us normalize the regional EF indicator by the corresponding country-level (C) indicator:

$$EF_{h,t}^r = \frac{EF_{h,t}}{EF_{C,t}} \equiv \frac{\frac{OS_{h,t}^F}{OS_{h,t}^A}}{\frac{OS_{C,t}^F}{OS_{C,t}^A}} \quad (5)$$

Further, let us define

$$\text{if } EF_{h,t}^r \begin{cases} > \\ = \\ < \end{cases} 1, \text{ then tourism in a region causes } \begin{cases} \text{greater} \\ \text{equal} \\ \text{smaller} \end{cases} \text{ hypothetical ecological footprint}$$

than in the country on average. The hypothetical  $EF_{h,t}^r$  is not measured in terms of physical units (like CO<sub>2</sub> or other atmospheric emissions, or it is not converted into a typical normalized measure of land area called global hectares (gha)) but it is simply the region and country specific relative EF measure.

Applying appropriate regional statistics for the years 2009 and 2010 in the equations (1)–(4), we can, firstly, calculate direct (superscript D) and total (superscript T) tourism income without EF corrections for the Satakunta region (i.e. left-hand side in Equation (6)). Secondly, using accommodation statistics compiled by Statistics Finland and the Equation (5), we can calculate the corresponding hypothetical footprints of tourism for Satakunta (i.e. right-hand side in Equation (6) below). The EF factors are effective just for the direct tourism income since the regional multiplier effects contain all subsequent regional income circulations, not only those caused by tourism.

$$\left\{ \begin{array}{ll} TI_{h,2009}^D = 180 \text{ million€}; & EF_{h,2009}^r = 0.56 \\ TI_{h,2009}^T = 247 \text{ million€} & \\ \\ TI_{h,2010}^D = 188 \text{ million€}; & EF_{h,2010}^r = 0.58 \\ TI_{h,2010}^T = 258 \text{ million€} & \end{array} \right. \quad (6)$$

The right-hand side in expression (6) above means that, in terms of the global environmental burden, one euro obtained from tourism in Finland was only 56 and 58 cents in Satakunta in 2009 and 2010, respectively. For the sake of simplicity, we have assumed that implicit revenues for society<sup>†</sup> are directly proportional to private-sector tourism income. The relationship between private-sector tourism income and the EF adjusted income  $TI_h^{EF}$  can thus be calculated as :

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<sup>†</sup> This type of revenue comes from increases in the value of assets (i.e. private tourist income here), which cannot be immediately seen and recorded. Implicit revenue is income derived from avoiding harmful aircraft emissions.

$$TI_{h,t}^{EF} = TI_{h,t}^D + (1 - EF_{h,t}^r)TI_{h,t}^D \quad (7)$$

The second term on the right-hand side in Equation (7) describes the social income of tourism in the Satakunta region measured by relative implicit climate cost-savings in terms of traveling modes (or overnight stays by foreigners). It can also be interpreted as one kind of relative eco-efficiency measure. If the coefficient in the parenthesis is negative (i.e.  $EF_{h,t}^r > 1$ ), then tourism in the region (here Satakunta) is more eco-inefficient compared to the nation (here Finland) as a whole, and at the same time private EF adjusted tourism income  $TI_{h,t}^{EF} < TI_{h,t}^D$ . By using values calculated in Equation (6) we can obtain:

$$\left\{ \begin{array}{l} TI_{h,2009}^{EF} = 180 + (1 - 0.56)180 = 259 \text{ m€}, \text{ where eco - efficiency } (1 - EF_{h,2009}^r)TI_{h,2009}^D = 79 \text{ m€} \\ TI_{h,2009}^{TEF}E = 326 \text{ m€} \\ TI_{h,2010}^{DEF} = 267 \text{ m€}, \text{ where eco - efficiency} = 78 \text{ m€} \\ TI_{h,2010}^T = 336 \text{ m€} \end{array} \right. \quad (8)$$

We could thus conclude that, in terms of the income it generates, tourism is well-sustainable in Satakunta compared to Finland as a whole. The relative EF-adjusted figures for direct tourism income are 259 and 267 million euros in the Satakunta Region in 2009 and 2010, and 326 and 336 m€, respectively, in terms of total EF adjusted tourism income. The corresponding eco-efficiency bonuses relative to Finland as a whole are 79 and 78 m€

## Conclusions and avenues for future research

Our study concerns the evaluation of the economic impact of tourism. In order to demonstrate the sustainable value-creation aspects we propose, as a long-term research goal, developing a wide-ranging relational indicator based on adjusted calculations. We explored a simple relative indicator of the economic impact of tourism on one region. A few features must be taken into consideration in assessing its usefulness. First, the indicator is relational, thus we can only express the results more as “qualitative” estimations than in absolute figures. On the basis of the calculations, however, we could discuss whether tourism creates more sustained value in one region compared to another when the effect of the global footprint is taken into consideration.

Second, and as an avenue for future studies, our indicator of sustained value creation in tourism needs to be validated in other local conditions and other locations. As is evident in expression (5) and according to our calculations of the global environmental burden, one euro spent on tourism in Satakunta is significantly more eco-efficient than the corresponding euro spent in Finland, on average. Further, we could conclude that regional aspects of sustainable tourism should always be taken into consideration in such calculations. Nevertheless, given the lack of relevant data on genuine ecological effects the model should be understood only as illustrative at this point.

Third, in the future we intend to extend our indicator system to cover not only the economic impact but also the social, cultural and ecological effects. The multidimensional nature of the research on sustainable tourism prevents us from drawing direct conclusions based only on economic aspects.

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