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Local economic impacts of national park visitors' spending in Finland: The development process of an estimation method

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Abstract
The local economic impacts of national parks and other nature recreation areas have recently aroused a growing interest. Due to the lack of practical methods, however, the results from the few case studies that have been made have neither been comparable nor easy to achieve. Based on this background the Finnish Forest Research Institute and Metsähallitus have in co-operation built an application for estimating the local economic impacts of national parks and other nature recreation areas. The U.S. MGM2 model has served as an archetype for the Finnish application, which largely relies on Metsähallitus' visitor monitoring system. The application produces comparable economic impact information across areas and over time. It also enables the annual follow-up of the impacts. This paper describes the development process including the problems faced on the way and the solutions found. It also shortly presents the method and the results. The first park-specific results show that the local income and employment effects vary a lot between the national parks. The next step will be to integrate the method to the Metsähallitus' customer database.

Keywords
national park, nature recreation, economic impact, income effect, employment effect

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Other information

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1 Introduction and background

National parks and other nature protection areas are well monitored when it comes to ecological issues but their economic values have received less attention. However, a recent TEEB report (2009) emphasizes the need to measure, monitor and report the values of natural capital in order to produce information for decision-makers. The values and benefits of the national parks are well recognised by people visiting them but for those citizens not interested in nature trips or nature values national parks and nature protection areas may seem to be waste of public funds. The values attached to the national parks include non-use (e.g. heritage values) and use values (e.g. effects for well-being, recreation). Measuring all the values simultaneously is yet practically impossible, but a part of use-values can be reflected by the local economic impacts originating from park visitors' spending. That is to say, how the money spent by visitors shows in the local economy.

Information about the economic impacts of national parks and nature recreation areas is needed especially in those countries where the parks are funded by the state. The demand for knowledge is obvious as many politicians, local decision-makers and financiers are constantly asking for economic impact information. In addition to justifying the public funding, understanding the economic impacts of visitor spending is useful at local level as the impact information can be utilised in marketing, in establishing new enterprises and even in increasing general acceptance of national parks among local stake-holders. The comparison of economic impacts from different parks may also help to explain which factors affect the size of the impacts.

In Finland, the increased interest, need and demand for estimating the local economic impacts of visitors' spending in national parks and other nature recreation areas has resulted in a number of case studies where the local economic impacts of certain areas have been estimated. The applied methods have varied a lot resulting in incomparable results. The case studies have also been quite expensive and laborious which has hampered the follow-up of the results. Based on this background, Finnish Forest Research Institute (Metla) and Metsähallitus Natural Heritage Services have developed a method for standardized economic impact estimation. The method is based on the standardized visitor monitoring administered by Metsähallitus and it provides comparable results between the national parks and other nature recreation areas and over time. It also enables annual follow-up of the impacts in a cost-effective way. The method is based on U.S. Money Generation Model 2 (Stynes et al. 2000).

This working paper describes the background and development process of a Finnish application. In order to keep the text readable, the text refers mainly to the national parks although visitor monitoring and impact estimation is conducted also in other nature recreation areas. This paper pays special attention to the problems faced during the process, and their solutions. The paper also presents the method and covers the first results shortly. The main interest lies in the income and employment effects originating from visitor spending.

2 Visitor monitoring in Finnish national parks and other nature recreation areas

The first published visitor surveys from Finnish national parks date back to beginning of 1990's (e.g. Sievänen 1993; Peura & Inkinen 1994; Sippola 1995). Even before that, many unpublished studies and study reports have been conducted. In the end of 1990's Metsähallitus NHS together

with Metla launched a visitor counting manual (Horne et al. 1998). It assessed the pros and cons of different visitor counting methods and gave practical guidance on how to plan and accomplish visitor counting. The development process of visitor monitoring continued in 2001 when the same organizations published a manual for visitor surveys (Erkkonen & Sievänen 2001). The manual aimed at standardizing visitor survey methods with common questions, data collection and reporting.

Nowadays Metsähallitus conducts regularly visitor counting and visitor surveys on state-owned protected and recreational areas. Visitor counting is a continuous process and the results are reported annually. Visitor surveys are recommended to be conducted every five years. Right from the beginning the visitor surveys have included a question on visitor spending. During the 2000's the spending question has been improved a few times in order to get more accurate data for economic impact estimation. In the first version the question covered also trip-related spending on the way to the destination and a chance to declare only the total costs instead of categorized spending. However, those were left out from the survey once it became obvious that they are confusing to the respondent. The latest format of the question from year 2008 is shown in figure 1. All visitor counting and survey data is saved in Metsähallitus's database system for visitor information (ASTA). The database also enables reporting of the data in many different ways.

In the mid 2000's it became obvious that to be able to compare visitor data between countries and to answer statistical requirements for example from EU, a common methodology between different countries would be needed. Thus, in 2004 a Nordic-Baltic workshop on Visitor Information Needs and Monitoring Methods was arranged by Metsähallitus and Metla (Erkkonen & Storrank 2005). This workshop was followed by the project called "Developing Visitor Monitoring Methods in

13. Spending

Have you spent/Will you spend money on various activities in the national park or its environs while on this trip (see area on map)?

❍ yes (→ please answer the following questions)
❍ no (→ move on to question 14)

Please tick the box that indicates whether you are estimating

❍ your personal expenses and your share of your group's joint expenses

OR

❍ the total expenses of your family or group.

Indicate below (points A–G) your total expenses for this trip **in the national park and its environs**. (Write 0 (zero) in the column if you have not spent any money on the activity in question)

A fuel or other purchases from service stations	_____ €
B costs for local transportation (for example local bus or taxi trips)	_____€
C food and other retail shopping	_____€
D café and restaurant purchases	_____€
E accommodation	_____€
F organised programme and recreational services (eg. guided tours, entry fees and exhibitions)	_____€
G other expenses (e.g. fishing, hunting or snowmobiling permits, equipment hire, etc.)	_____€

Figure 1. Visitor spending question.

the Nordic and Baltic Countries" in 2005 (Kajala 2006) which finally resulted in a Nordic-Baltic manual of Visitor Monitoring in Nature Areas (Kajala et al. 2007). However, the recent Nordic-Baltic workshop of Monitoring and Management of Visitors and Visitor Flows in November 2009 showed that the manual is not taken into wide use in Nordic and Baltic countries but the process is still going on. Metla and Metsähallitus are also seeking to expand the co-operation on visitor monitoring issues to other European countries.

3 Economic impacts of national parks

Economic impacts of national parks typically mean impacts that occur due to the visitors' spending or governmental spending related to the park. Trip-related visitor spending can occur on the way to the national park, in the national park or in its close surroundings. The different impacts may include impact on income, wages, taxes, value-added and employment and they can be divided in direct, indirect and induced effects. Direct effects occur when visitors spend money on local goods or services. Indirect effects emerge when enterprises that primarily serve tourists purchase products and services from other local enterprises. The local consumption of local people employed either directly or indirectly by tourism generates induced impacts (Miller & Blair 2009). It should be kept in mind that the economic impacts do not describe the total value of the national park as they only reflect a part of the use-values. The economic impacts should also not to be mixed with the concept of economic efficiency (benefit-cost) (see Alward et al. 1992).

Well-known methods of tourism impact analyses include the input-output method and tourism satellite accounts. In this report the methods are presented only in a cursory way. The input-output method is a matrix representation of a region's economy and it is used to estimate the impact of changes in one industry on others (Hewings 1985, Miller & Blair 2009). It has been largely used on estimating impacts of different type of tourism in all over the world (e.g. Archer 1995, Archer & Fletcher 1996, Gelan 2003, Daniels et al. 2004). Indeed, it has also been applied to estimate the impacts of national park tourism and rural tourism (e.g. Bergström et al. 1990, Cordell & Bergström 1992, Saeter 1998, Stynes et al. 2001b, Buultjens & Luckie 2004). Tourism satellite account (TSA) is a statistical tool which describes the phenomenon of tourism in a way that is compatible with international national accounting guidelines (OECD 2001). It has been widely used in state-level examinations but for regional or local level they are applied less (e.g. Ellard et al. 1999, Stynes 2001, Konttinen 2005). In Nordic countries also a so-called Nordic model has been used, as can be seen in the next paragraph where Finnish economic impact studies are presented (about the model see e.g. Paajanen 1993, Matkailun tulo- ja työllisyysvaikutukset…1983).

The increased interest in economic impacts of national parks and other recreation areas has lead to many case studies in Finland. For example, Kangas et al. (1998) studied the economic impacts in Teijo National Hiking Area already in the late 1990's. Rinne (1999, see also Rinne & Saastamoinen 2005) studied the impacts in municipality of Kuhmo and Eisto (2003) in Ruunaa recreation area, both with the Nordic model. It has also been largely applied in municipalities of Inari and Kuusamo where several impact studies have been conducted (e.g. Kauppila 2008, Rosqvist 2008, Herranen & Vallo 2007, Kauppila 2009). In addition, Berghäll (2005) applied the Nordic model in the Archipelago National Park. Huhtala (2006) conducted an expenditure study and studied the impacts with the input-output based MGM2 model (Stynes et al. 2001) in Pallas-Ounastunturi National Park and the effects of investments in nature recreation structures were studied applying input-output model in Pallas-Ylläs National Park by Vatanen and Hyppönen (2008). In Seitseminen and

Helvetinjärvi National Parks Huhtala et al. (2009) compared different methods for estimating the economic impacts of national park visitors' spending. Most of these case studies were conducted in co-operation with Metla and Metsähallitus.

Valuable information as the case studies provided, the problem was that due to different methods and approaches applied, their results were not comparable. In addition, the case studies were laborious and thus expensive. However, they provided useful information about the pros and cons of different methods. Case studies also pinpointed problematic issues such as defining the study region or handling local visitors' spending or those visitors who had not declared any costs or were on multi-destination or a multi-purpose trip.

4 Developing a Finnish application: the process and solutions for problematic issues

The need for a more uniform method for calculating the local economic impacts of nature recreation was recognized in early 2000's. The aim was to find a way to produce reliable, comparable (between parks and over time) and practical economic impact information cost-effectively. One could say that the development process started when impact studies in Archipelago National Park (Berghäll 2005) and Pallas-Ounastunturi National Park (Huhtala 2006) were conducted. At the same time Metsähallitus tried to set up a Nordic-Baltic co-operation project on economic impact issues. However, the time was not ripe and the idea of a co-project did not arouse interest. Metsähallitus did not bury the idea but continued co-operation with Metla and further development of the survey question on visitor spending. In 2007 these two organizations started a case study in Seitseminen and Helvetinjärvi National Parks where the Nordic model and input-output applications were compared (Huhtala et al. 2009).

Based on the experiences from the previous studies, Metsähallitus decided to build a Finnish version of the U.S. MGM2 model. The MGM2 model is an Excel application where the number of visitors, average spending and multipliers are multiplied by each other (Stynes et al 2000; MGM2). The multipliers reflect how the money spent in the area multiplies in the local economy, and they are extracted from local input-output tables. Compared to the Nordic model, MGM2's main advantage is cost-effectiveness. It enables utilization of the existing visitor data and practically once the multipliers are calculated, they can be used for a few years before updating them. The input-output analysis is also largely recognized and applied in general tourism studies around the world while Nordic model seems to be only used in Finland.

The project was officially set up as a co-project of Metsähallitus and Metla in 2009 but some preparatory work was conducted already in 2008 as a part of normal co-operation. From the very beginning it was clear that the project aimed at constructing a method which would enable impact estimation for each park separately but also the calculation of the state level effects as well as the annual follow-up of the impacts. It was also planned that the method would provide both practical information for park superintendents and strategic information for upper-level management. The basic output was defined to be the total effects on income and employment. A more detailed analysis was to be applied to those national parks, where a visitor survey had been conducted recently. In the detailed analysis the spending and economic impacts were to be investigated by segments (daytime visitors vs. overnight visitors, foreign vs. Finnish vs. local visitors) and by spending categories.

The three inputs in MGM2 are, as stated earlier, the number of visits, average spending and multipliers extracted from local input-output tables. For the Finnish version the number of visits for all parks and spending information for some of the parks are available from Metsähallitus's visitor information database (ASTA). However, some adjustments to the spending data are needed in order to receive the average spending per visitor and per visit in different segments. For those parks, where no visitor survey had been conducted, spending information can be borrowed from some other, similar type of area.

The multipliers require a little more background work. The problem with the national park or other recreation area input-output analysis is that even the regional tables describe too large an area and using the multipliers extracted from those tables would result in too high impacts. Thus the local tables must be constructed for each specific region either by surveying the region and constructing the table from scratch, or by converting the regional table from a higher level.

Statistics Finland produces state-level input-output tables annually with a few years delay. Regional (provincial) tables are produced in an irregular time span. In the Finnish version it was decided to create the local tables from regional tables by applying a hybrid method where a non-survey technique called the cross-location quotient (CLQ) and local statistical data are combined (McCann 2001). However, due to the limited resources it was not reasonable to construct the local tables for each national park and nature recreation area. Instead it was decided to classify the parks and derive average multipliers for these classes from local input-output tables.

In the next paragraphs some more attention is paid to the problematic issues (defining the study region, classifying the parks, extracting the multipliers) related to the impact estimation.

Defining the hinterland of the national park

Defining the study region, the hinterland, for each national park affects the impacts in many ways (Stynes et al. 2001). First of all, it is hardly possible to spend money in the Finnish national parks because the services are mainly located outside the parks. The study region defines from which area the visitors are asked about their spending. Secondly, it also segments Finnish visitors into locals and others. Thirdly, it affects the multipliers because the smaller the area, the smaller are the multipliers.

In Finland the process of finding a good solution and balance between different aspects took some time and a couple of case studies. Until 2007 the visitors were asked to give their spending "in the park and its close surroundings" but these surroundings were neither defined nor standardized. For this reason it was impossible to know what costs visitors include when being asked about their spending.

First time the study region was defined with a map in the economic impact case studies in Archipelago National Park (Berghäll 2005) and Pallas-Ounastunturi National Park (Huhtala 2006). In Archipelago two different study regions were defined. The smaller region included those municipalities where visitors were supposed to spend money, and the larger one those municipalities where employment effects were to occur and from where the local enterprises were supposed to buy goods and services. In Pallas-Ounastunturi National Park (Huhtala 2006) the approach was totally different as only the very close surroundings of the park were included in the study. The study region did not include any municipality as a whole because the size of the northern municipalities are large, thus including many other popular tourist attractions.

In 2006 defining the study region on a map was tested also in the visitor surveys of Linnansaari National Park (Pulkkinen & Valta 2008), Seitseminen National Park (Tunturi 2008a), Helvetinjärvi National Park (Tunturi 2008b) and multi-use (military training and hiking) area of Hämeenkangas (Hankala 2008). These study regions were still very different from each other. Linnansaari NP's hinterland was defined according to the example of Pallas-Ounastunturi NP including only the very close surroundings of the park. For other three areas the hinterlands were defined according to the MGM2 by drawing a circle with radius of 25 km around the areas.

Although the circular study region worked well in the visitor survey, it didn't enable creation of the local input-output tables because statistical data only existed for municipalities. For that reason the general definition of hinterland was once more altered when the project of creating an economic impact estimation tool was started. The current - and planned to be unchangeable - hinterland of each national park and other recreation area now includes municipalities of location and discretionarily other close municipalities.

Classifying the parks and extracting the output and employment multipliers

As mentioned before, the parks were to be classified and average multipliers produced for these classes. Finding a factor by which the classification should be done was not easy but the literature review revealed that the density of population correlates well with the size of the multipliers (Chang 2001). The population density was calculated for the hinterland of each park and the parks were divided in three groups: capital area, other built-up area and rural area. In addition there was one group including all the parks located in tourism centers. The average multipliers for each class were extracted and calculated from local extended input-output tables which were created for 21 parks of all 35 Finnish National Parks. An extended input-output table here refers to a table where household spending is included, which means that the multipliers extracted from these tables include the induced effects of household spending (Bergström et al. 1990, Frechtling 1994, Vatanen 2001).

The local extended input-output tables were created for all those parks which were located in one province and whose hinterland included more than one municipality. This definition was determined by the availability of data. For the creation of the local tables the cross-location quotient method was applied (McCann 2001). The input-output tables do not include households' spending, so the households' row and column were constructed with help of statistical data (detailed description in Knuuttila & Vatanen 2008, see also Lahr 1993). Then a Leontief inverse matrix was derived from the local tables and the output multipliers were calculated from the Leontief inverse matrix by summing the entries of each column. The columns represent the industries and the column entries represent how much output is required from each industry (row) if the final demand increases by one monetary unit (Hewings 1985).

The direct employment multipliers (employees/1 M€ of output) were calculated by dividing the number of employees in the region by the regional output for each industry. The total employment multipliers required more calculations. First each local inverse matrix's row was multiplied by the direct employment multiplier of row's industry. Finally, for each industry, the total employment multipliers for one million euros increase in final demand were received by summing the column entries of this matrix.

Table 1. Spending categories and equivalent sectors in national accounting.

Spending categories in the visitor survey	Equivalent sector in input-output tables (Statistics Finland SIC 2002)
Fuel or other purchases from service station	Trade
Costs for local transportation	Transport, storage and communication
Food and other retail shopping	Trade
Cafe and restaurant purchases	Hotels and restaurants
Accommodation	Hotels and restaurants
Organised programme and recreational services	Transport, storage and communication
Other expenses	Average of "Real estate, renting and business services" and "Other community, social and personal service activities"

The direct employment multipliers (employees/1 M€ of output) were calculated by dividing the number of employees in the region by the regional output for each industry. The total employment multipliers required more calculations. First each local inverse matrix was multiplied by a diagonal matrix where the diagonal consisted of artificial 1 M€ increase in demand for each industry. The resulting coefficients were then multiplied by the industry's direct employment multiplier. Finally, the total employment multipliers for each industry were received by summing the column entries of this matrix.

The output and employment multipliers were extracted for those sectors equivalent to the spending categories asked in the visitor survey (table 1). The category "others" did not have an equivalent sector in regional input-output tables so for that an average of two sectors was used.

Although the visitor spending is received from the visitor survey it needs some modifying because not all visitor spending can be counted as direct sales to the region. This applies to the retail purchases where only the retail margin is allocated to the retail sector. The remaining amount is allocated to the manufacturing sector. In many cases the products purchased by visitors are not manufactured in the region and thus the share of manufacturing leaks out from the region. The retail margin is typically unpublished information and thus difficult to obtain. For the Finnish version the retail margin was defined as the ratio between the retail sector's output and turnover and it varied between 22 and 36% in the park classes. For the service stations and gasoline purchases the marginal was defined to be 8%.

Handling local visitors' spending

Many national parks visitors are local people popping in for a day-time visit. Their trip-related spending is typically low, consisting usually of a packed lunch or a cup of coffee. However, in many economic impact studies (e.g. Bergström ym. 1990a–b; Rinne 1999; Berghäll 2005; Crompton 2006) this spending is left out from the analysis because it is not external money to the local economy. That means that if there was not a national park in the area, the local people would spend the same amount now spent for nature recreation on some other good or service bought from the local economy. From another perspective presented for example by Oosterhaven and van der Knijff (1988), if there was not a national park in the area, the local people would travel outside the area to find one, and thus take their money out from the local economy. In Finnish case a decision was made to include local visitors' spending in the analysis but also to report their share separately. In many areas local visitors' spending has only a minor impact.

Dealing with "zero-spending" visitors

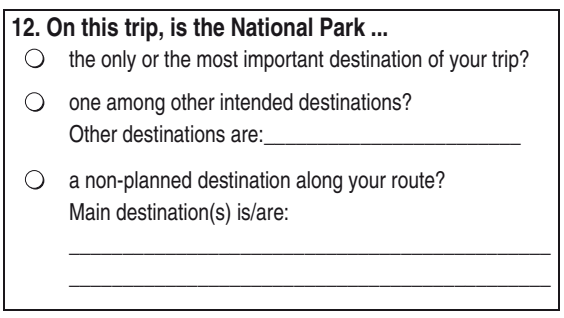
Some visitors do not feel comfortable when being asked about their trip-related spending. Thus, the spending question is often left blank. The problem faced in several case studies has been to separate non-respondents from those visitors, who did not have any trip-related costs but didn't answer "0" either. If all the blanks are treated as zeros when calculating the average spending, the average turns to be too low. On the other hand leaving out all zeros would overestimate the impacts. The problem was solved when an additional part asking, whether respondent had any costs related to the trip, was added to the spending question (see figure 1). Now all those visitors, who have declared that they did not have any costs, are treated as "zero" while those who have left the question blank are left out from the analysis.

Visitors on a multi-purpose or a multi-destination trip

In the first economic impact case studies every visitor's spending was taken into account as such. Only later it was realized that in some cases the visitor spending maybe shouldn't be assigned to the national park as whole. If the national park is just one of the many destinations or one of the many reasons to visit the area, attributing all of the trip-related spending to the national park might overestimate its impacts. The problem was partly solved when the spending question was improved to include only the spending in the hinterland of the national park. Many hinterlands do not have any other tourist attractions which could alter the results. However, some national parks are located next to the tourism centers, which make it difficult to analyse the impact of the national park.

In Finland the standardized visitor survey includes a question concerning the importance of the national park as a destination (see figure 2).

The question enables dividing the visitors in three groups: visitors in the first group have arrived to the area because of the national park. For the second group the national park is one destination among others and the third group has come to the national park without planning it beforehand. When trying to find a solution to the question "which part of the spending can be assigned to the national park" there were many suggestions such as multiplying the second group's visitors ' spending with 0,5 and multiplying the third group visitors' spending with 0,25 or leaving the third group visitors totally outside the analysis. However, none of these approaches was based on knowledge but rather they were "guestimates". Thus, after discussing and testing these approaches in the case studies it became obvious that separating national park's share of spending reliably with current data is impossible. Instead of that, economic impacts were calculated for two groups: for all visitors and for those visitors whose had answered that the national park was their only or


12. On this trip, is the National Park ...

○ the only or the most important destination of your trip?

○ one among other intended destinations?
Other destinations are:_____

○ a non-planned destination along your route?
Main destination(s) is/are:
_____
_____

Figure 2. How important destination is the national park? Question from the visitor survey.

2. How long did you stay or are you going to stay during this visit

a. in The National Park? (answer in days or hours)
About _____ days *or* _____ hours

b. altogether in The National Park and in its vicinity, for example in tourist centre (see map)?
About _____ days *or* _____ hours

→ **if your answer to the previous question (2b.) was more than 1 day, how many days have you spend or you will you spent in National Park during this visit?**
_____ days

Figure 3. The length and number of visits in the National Park. A question from the visitor survey.

the most important destination on the trip. The latter impact figure is considered to describe the minimum effect of the park.

Visits vs. visitors

Another challenge has been to combine the visitor spending data with the number of visits. The visitors are asked to declare their spending for the whole stay in the area. But during her/his stay one visitor can make many visits to the park. The number of visits and number of visitors differ especially in those parks which are located next to the tourist centers (e.g. skiing centers in Northern Finland) where visitors often stay in the area one week, visiting the park a few times. This problem was solved by adding one question to the visitor survey (figure 3, addition after arrow). The spending is then divided by the number of days spent in the park in order to receive the spending per visit.

5 The Finnish Excel-based application

The Finnish economic impact estimation project resulted in an Excel-based application called Paavo. It is an easy-to-use tool which everyone can use by choosing the area of interest, visitor survey to be used in calculations and the number of visits from the drop-down menus. Technically it has been built on Excel sheets and it applies Excel functions, macros and SQL queries. The number of visits as well as all the data from visitor surveys is enquired half-automatically from visitor information database ASTA. The park classification and multipliers related to each class are built in the Excel. The user interface of the application is presented in the figure 4 and the calculation logic of Paavo in the figure 5.

The spending information received from the visitors includes value added tax (VAT) which has to be subtracted before calculating employment effects. The leakages in the figure 5 refer to the fact that not all of the visitors' spending is counted as direct sales. In input-output methodology only the retail margins are allocated to the retail sector. The manufacturing costs are allocated to manufacturing sectors which often means leakages from the local economy as only a small portion of goods is produced in the region where they are sold.

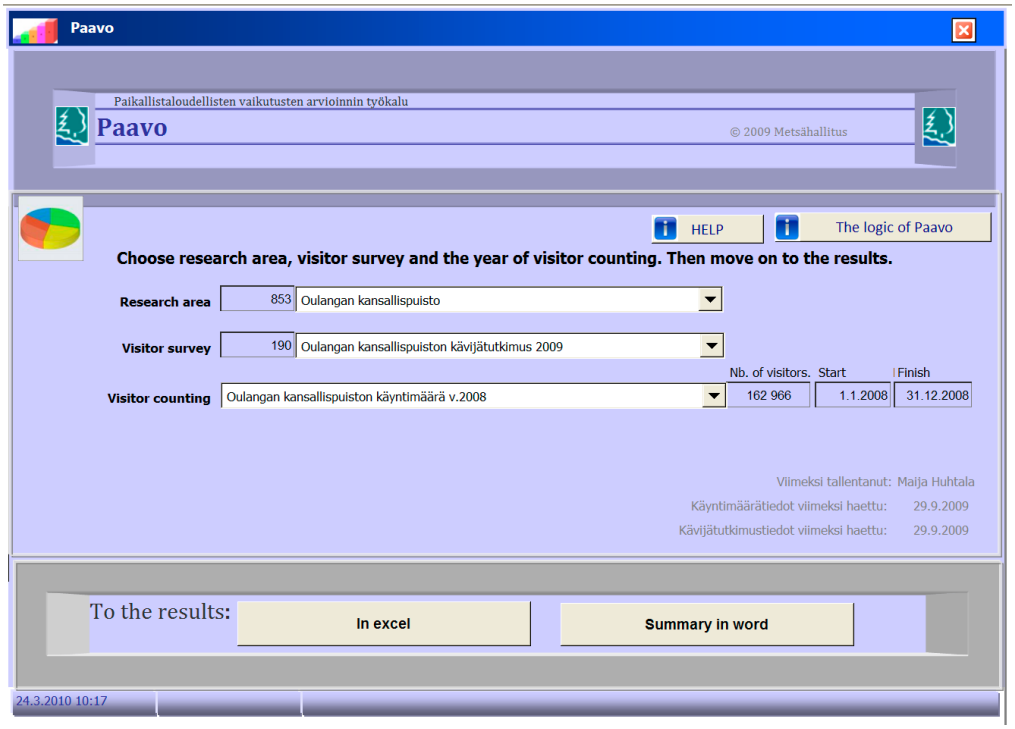


Figure 4. The user interface of Paavo.

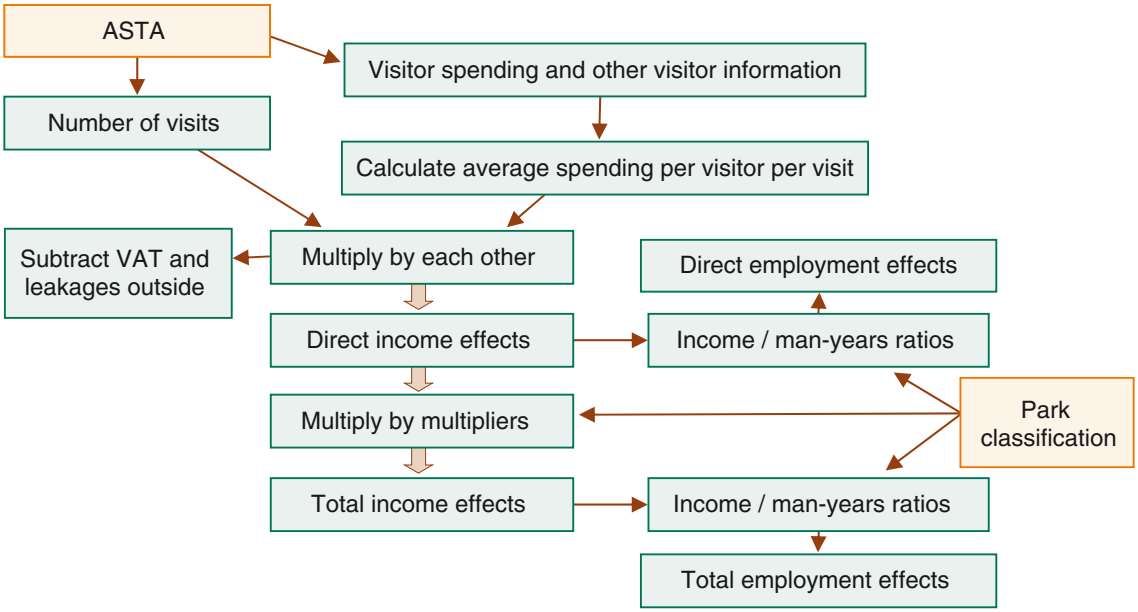


Figure 5. The calculation logic of Paavo.

Sources of error and limitations

The reliability of the method is highly dependent on the success of visitor counting and visitor surveys because the errors in visitor monitoring will be repeated when the total effects are calculated. Metsähallitus continuously develops the visitor monitoring methods in order to improve the accuracy of the results.

The obvious source of error is the possibility to apply other area's visitor survey data in the analysis. However, if the reference area has been chosen with care, the results can be considered to be indicative. It is also likely that the number and quality of visitor surveys will increase in the future because it already seems that the national park superintendents' interest in and motivation for visitor surveys has increased since publishing the method.

Other sources of error are the use of the average multipliers instead of area-specific multipliers and use of the multipliers derived from old input-output tables. The age problem stems from the fact that Statistics Finland publishes regional input-output tables in an irregular interval and often many years after the data collection. However, because the multipliers affect only the indirect effects, their impact on the total effects is relatively small compared to other factors.

In some cases also the size of the survey data may be too small to produce reliable results for all visitor segments. If the size of the segment in survey is less than ten visitors, the impacts are not calculated. It would be interesting to analyse the impacts by activities but that would require larger data sets or grouping the activities harshly.

The most serious limitation of the method is the inability to estimate the impacts of governmental spending. At the moment the method is also limited to income and employment effects which leaves out the impacts on taxes and value added.

6 Results from Finland

The first results have been counted with the number of visits in 2009 and with the visitor survey data from years 2005–2009. The results show that the annual total income effect of all national parks is about 85 million euros to the local areas. About 1100 man-years of work are related to this income. The largest income effects (17.7 M€) occur around Pallas-Yllästunturi national park. However, effects vary a lot between the parks. There are a few smaller parks in Southern Finland, in which the annual income effects are less than 100 000 €.

The results for all parks are presented in the appendix 1. Similar table will be produced each year in order to follow up the results. The fourth and fifth column in the appendix table show the impacts which are calculated applying the number and the spending of those visitors to whom the national park was the only or the most important destination on this trip. These are considered to be the minimum effects because those visitors have visited the area only because of the national park, irrespective of the other attractions in the area. In the last column the reader can check, whether the analysis for each park is based on parks' own visitor survey data or whether the data is borrowed from similar type of a park. If the visitor survey data is from the same park, and conducted in last couple of years (2008–2009), the results are more reliable than in other cases.

In addition to the results presented in the appendix, the detailed impacts are calculated for those parks where a visitor survey has been recently conducted. The detailed analysis includes average spending per segments and per spending categories, as well as the income and employment impacts stemming from spending of different visitor segments.

7 Conclusions, lessons learned and future visions

For the first time in Finland, it is now possible to estimate the local economic impacts of national park visitors' spending. The method enables estimation of annual income and employment impacts for each national park in a comparable way. The aim of this report was to present the development process of the method and to share experiences and lessons learned with others who are interested in setting up an economic impact estimation system.

The guiding stars in the process have been the comparability of the results and the reliability and usability of the method. The comparability is achieved by standardized data collection and use of similar method in impact calculation. Measuring the reliability is impossible because the exact impacts are unknown. So, in order to ensure the trustworthy results, every detail of the method has been designed keeping the criteria of reliability in mind. The results are also compared to the previous studies to cross-check their reliability. The usability of the method means that it is user-friendly and free to use for everyone entitled to use Metsähallitus's visitor information database. This has already actualized in the current Excel application but the usability will still improve once the method is integrated into the database. The integration project takes place during year 2010. All in all, the release of the new method means that separate economic impact case studies for individual areas are not needed any more but the impacts can be reported cost-effectively as a part of Metsähallitus's annual reporting.

One of the best outcomes of the process was the well-working co-operation between a research organisation (Metla) and the organisation managing the national parks (Metsähallitus). Combining the theoretical and practical knowledge has provided useful insights into the method and gives confidence to the results in many ways.

In addition the process strengthened the view that the existence of regular and standardized visitor monitoring system is a prerequisite for the continuous economic impact estimation. The situation in Finland is quite good because all the national parks are managed by one government agency, Metsähallitus, which has worked actively on visitor monitoring issues. There is even a group of experts called SMART (Experts on Sustainability and Management of Recreation and Tourism), which controls and guides national parks on visitor monitoring and further develops the monitoring methods. This guidance is necessary in order to maintain the high quality of visitor monitoring which for its part is crucial to the reliability of the economic impacts. It seems that applying the visitor monitoring data into economic impact estimation has improved the motivation for monitoring: in many national parks the importance of visitor monitoring is now understood better than before.

Although the visitor monitoring system is well on the right path, it is by no means ready and requires continuous development. The challenge in the future will be to develop the method further yet maintaining the comparability between years.

Future visions

Probably the most important addition to the method would be the possibility to estimate also the impacts of governmental spending and investments. To ensure the reliable comparison between the years, inflation factors should also be constructed into the model. At the moment the interest has been on the income and employment impacts but it is possible that in the future also other measures (taxes, value-added) are added into the model.

It would also be interesting to enlarge the method to other actors and tourist attractions outside Metsähallitus. This could fit together with further development of regional tourism satellite accounts which would need co-operation with Statistics Finland. In addition, far in the future lies the vision of estimating the well-being effects of national parks with a standardised system.

In the global world and united Europe the requirements for common ways of measuring and reporting different phenomena are increasing. Metla and Metsähallitus are actively working on international cooperation aiming to produce comparable visitor monitoring data between the countries. The need is now recognized at state level but for global and/or continental progress the visitor monitoring standards and requirements should be set by the EU or the International Union for Conservation of Nature (IUCN).

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Appendix 1. Local economic impacts of Finnish National Parks.
(Appendix updated 08.04.2010)

National Park	Total income effect (M€)	Total employment effect (man-years)	Income effect if the NP is trip's most important destination (M€)	Employment effect if NP is trip's most important destination (man-years)	Visitor survey applied in the analysis	Nb. of visits in 2009
Archipelago	3.6	43	2	23	Archipelago NP 2008	53 428
Eastern Gulf of Finland	0.7	9	0.4	4	Eastern Gulf of Finland 2007	19 000
Ekenäs Archipelago	3	36	1.9	22	Ekenäs Archipelago 2007	44 428
Helvetinjärvi	0.7	8	0.3	4	Helvetinjärvi NP 2006	32 862
Hiidenportti	0.9	12	0.1	1	Hiidenportti NP 2005	12 208
Isojärvi	0.2	3	0.1	1	Helvetinjärvi NP 2006	10 708
Kauhaneva-Pohjankagas	0.1	1	0.1	1	Kauhaneva-Pohjankangas NP 2007	4 539
Koli*	5.3	70	2	26	Koli NP 2009*	127 597
Kolovesi	0.7	9	0.2	2	Linnansaari NP 2006	7 322
Kurjenrahka	0.2	2	0.2	2	Kurjenrahka NP 2007	28 352
Lauhanvuori	0.2	2	0.1	1	Lauhanvuori NP 2007	9 775
Leivonmäki	0.3	3	0.1	1	Helvetinjärvi NP 2006	12 456
Lemmenjoki*	0.5	6	0.2	2	Käsivarsi-Kilpisjärvi 2009	10 000
Liesjärvi	0.9	11	0.4	5	Seitseminen NP 2006-2007	30 435
Linnansaari	3.1	38	0.7	8	Linnansaari NP 2006	31 052
Nuuksio*	1.4	11	0.8	6	Nuuksio NP 2009*	179 686
Oulanka	14.7	190	6.8	86	Oulanka NP 2009	165 592
Pallas-Yllästunturi*	17.7	234	9.6	126	Pyhä-Luosto NP 2009*	418 978
Patvinsuo	0.6	8	0.2	3	Patvinsuo NP 2007	12 107
Perämeri	0.3	4	0.2	2	Eastern Gulf of Finland 2007	8 951
Petkeljärvi	1.0	13	0.3	4	Patvinsuo NP 2007	19 464
Puurijärvi and Isosuo	0.1	1	0.1	1	Kurjenrahka NP 2007	11 636
Pyhä-Häkki	1.2	15	0.1	1	Pyhä-Häkki NP 2007	16 816
Pyhä-Luosto	5.4	71	2.9	38	Pyhä-Luosto NP 2009*	127 865
Päijänne	0.5	6	0.3	3	Päijänne NP 2008	14 798
Repovesi	1.7	21	1.2	15	Repovesi NP 2007	74 687
Riisituntur	1.3	17	0.6	8	Oulanka NP 2009	15 000
Rokua	1.7	23	0.1	2	Hiidenportti NP 2005	23 267
Salamajärvi	0.5	7	0.2	2	Patvinsuo NP 2007	10 700
Seitseminen	1.3	16	0.6	8	Seitseminen NP 2006-2007	45 453
Syöte	3.0	40	2.6	34	Syöte NP and Syöte National Hiking Area 2005	39 727
Tiilikkajärvi	0.4	5	0.1	1	Patvinsuo NP 2007	7 415
Torronsuo	0.1	2	0.1	1	Kurjenrahka NP 2007	20 481
Urho Kekkonen*	12.2	161	6.6	87	Pyhä-Luosto NP 2009*	289 225
Valkmusa	0.2	2	0.1	1	Kauhaneva-Pohjankangas NP 2007	7 000
All NP's summed up:	85.7	1100	42.3	532		1 943 010
Mean / NP	2.4	31	1.2	15		55 515

* Analysis is based on summertime visitors' spending. Typically winter time visitors spend more money in the area.