

# UK natural capital accounts: Tourism - methodology

Measurement and development of UK tourism natural capital ecosystem service accounts, including the specific methods used to value individual components of natural capital and physical and monetary data sources.

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Release date:  
28 April 2021

Next release:  
To be announced

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# 1 . Introduction

The methodology used to develop the tourism and outdoor leisure natural capital accounts estimates remains under development. The estimates reported in the tourism and outdoor leisure natural capital accounts, 2021 are experimental and should be interpreted in this context.

[Experimental Statistics](#) are those that are in the testing phase, are not yet fully developed and have not been submitted for assessment to the UK Statistics Authority. Experimental statistics are published to involve customers and stakeholders in their development and as a means of building in quality at an early stage.

We have used a wide variety of sources for estimates of UK natural capital, which have been compiled in line with the guidelines recommended by the United Nations (UN) System of Environmental-Economic Accounting Central Framework, and System of Environmental-Economic Accounting Experimental Ecosystem Accounting principles, which are in turn part of the wider framework of the system of national accounts.

As the UN guidance is still under development, the Office for National Statistics (ONS) and the Department for Environment, Food and Rural Affairs (Defra) published a summary of the [principles underlying the accounts](#).

We welcome discussion regarding any of the approaches presented in this article via email at [natural.capital.team@ons.gov.uk](mailto:natural.capital.team@ons.gov.uk).

## 2 . Methodological overview

A brief overview of the methodology of tourism and outdoor leisure will be provided here. For a more detailed description please see the [report](#) written by the Economics For The Environment Consultancy Ltd (Eftec).

The method used in the tourism and outdoor leisure natural capital accounts captures the expenditure incurred during a visit to the natural environment in which key outdoor leisure activities were completed. The amount spent on items which enable or enhance visits to the natural environment are counted, such as transport costs and entry tickets to visitor attractions. Other expenditure, such as money spent on food and drink or shopping, is excluded. The expenditure is then attributed to different habitats using a mixture of survey responses and the area of each habitat type within different regions of Great Britain.

Estimates of tourism and outdoor leisure refer to trips three hours or longer in duration taken within Great Britain, in which at least one activity related to outdoor leisure was completed. This includes overnight stays and visits to Great Britain from other countries.

Estimates for tourism within this publication use survey data across three main surveys, which combined cover England, Wales, Scotland and the UK. Estimates for England, Wales and Scotland are gathered from the Great Britain Day Visits Survey (GBDVS), as well as the Great Britain Tourism Survey (GBTS). The GBDVS samples around 35,000 respondents, containing around 31,000 individual day visits lasting longer than three hours in length. The GBTS samples around 51,000 respondents, each of which provided information for one or more overnight visits. Estimates at the UK level are also gathered from the International Passenger Survey (IPS). The IPS samples around 800,000 respondents on various routes in and out of the UK.

Additional data have been gathered for Northern Ireland to produce initial estimates of nature's contribution to tourism and outdoor leisure within the UK. Data for Northern Ireland were used from the domestic tourism survey ran by the Northern Ireland Statistics and Research Agency. This survey samples approximately 4,500 households, capturing 2,500 overnight trips.

## 3 . Methodology changes

The methodology researched and proposed by the Economics For The Environment Consultancy Ltd (Eftec), was completed on a sample set of 2017 data as a proof of concept. To enable estimates for tourism and outdoor leisure within Great Britain to be calculated across a greater time frame, changes were made to the methodology.

### Survey data reconciliation

Data from the GBDVS are available between 2011 and the present, however, the survey underwent changes in 2016. This resulted in the list of outdoor-related activities respondents could report as having completed during their trip changing. The 2015 activity list was reconciled with the 2016 list to maintain the consistency of the data.

To avoid drastic level changes to the expenditure time series the Great Britain Day Visits Survey (GBDVS) applied an adjustment to all data pre-2016. Despite this and the activity reconciliation, activity expenditure data fluctuated heavily between 2015 and 2016. To avoid a large upward step-like change in the time series between the two years, 2011 to 2015 data were lifted to the level of the 2016 to 2019 data. The growth of the total survey expenditure between 2015 and 2016 was used to back-cast 2016 outdoor-related activity expenditure, generating a new 2015 value for each activity. 2011 to 2015 outdoor-related activity expenditure data were then lifted to match the generated 2015 value.

### Outdoor-related activities

A list of 24 outdoor-related activities were used to generate the contribution of the natural environment to tourism and outdoor leisure within the original methodology. However, it was determined that some of these activities were not always specific to the outdoors. For instance, it could be argued that visits to zoos, aquariums or wildlife attractions may take place mostly indoors, leading to very little interaction with the environment. As a result, five activities were removed from the original list. These include: going to visitor attractions; visiting historic buildings; visiting zoos, aquariums and wildlife attractions; visiting religious buildings; and visiting a location associated with a film or literature. We will continue to consider theoretical and statistical ways in which we might estimate more objective data links between activities and nature.

### Expenditure item approach

Within their report, Eftec apply an ecosystem contribution proportion to each tourism and outdoor leisure activity based on its dependence on the natural environment. For example, a marine habitat is required for water sports to occur on any trip. As a result, a 100% proportion was applied to the water sports activity within a coastal setting. Activities that could be completed without the natural environment were given lower contribution proportions, as they were only enhanced by the ecosystem.

This approach was removed in favour of an expenditure item approach, currently implemented within the recreation natural capital accounts. Within this approach, expenditure is broken down into categories, such as transport, food and drink, entrance tickets, accommodation, and others. The cost associated with being able to visit the natural environment can be determined by estimating the money spent on transport and travel, entry tickets to visitor attractions, hiring equipment and a proportion of package holidays relevant to travel. Other costs unrelated to the environment, like food and drink, are ignored. This change has caused a reduction in total expenditure but better illustrates the costs associated with visiting and experiencing natural ecosystems within Great Britain.

## Habitat apportioning

Changes were also made to the method in which expenditure is apportioned to different habitats. Through expert judgement the original methodology applied a 100% proportion to urban-related habitats for the Greater London region, removing any proportion for rural or coastal habitats. After analysis of the region through the 2015 land coverage map this proportion was altered to 70% for urban and the remaining 30% for rural habitats. Though the land coverage map does not reflect where money will be spent, it is a more appropriate depiction of the types of habitat found within Greater London.

## 4 . Tourism and recreation

The estimates of expenditure in the tourism and outdoor leisure natural capital account shares similarities with another natural capital account, recreation. The recreation natural capital account measures all spending on transportation, parking and entry fees for trips to the natural environment, which has many similarities to the estimates of tourism and outdoor leisure. Care needs to be taken when implementing tourism and outdoor leisure estimates into future UK natural capital accounts to ensure the amount spent because of the natural environment is not double-counted.

A potential solution to this problem is to assume that the expenditure measured within the recreation natural capital account is captured in its entirety by the tourism and outdoor leisure natural capital account. The estimates of tourism and outdoor leisure expenditure within the UK are approximately 1.5 times greater than the recreation estimates.

Expenditure estimates of tourism and outdoor leisure only include the amount spent on trips lasting three hours or longer in length. The recreation natural capital account includes money spent during local recreational trips, irrelevant of their trip length. Therefore, trips shorter than three hours in length are not included in both accounts and therefore could remain as part of the recreation natural capital account. Although, this is likely to be only a small fraction of the total expenditure as a greater proportion of money is spent during longer recreation trips. Further work is currently required to determine and implement a solution to avoid double-counting between the tourism and outdoor leisure and recreation natural capital accounts.

## 5 . Physical flow

The report written by the Economics For The Environment Consultancy Ltd (Eftec) (2019), discusses the methods to achieve estimates of the contribution of the natural environment to tourism and outdoor leisure expenditure. However, the report does not include a methodology to calculate the number of tourism and outdoor leisure visits within Great Britain - physical flow.

The physical flow of a natural asset is the measure of its output in units appropriate to the good or service. This differs from the annual value and asset value, which measure the monetary value of a natural resource.

Data were gathered from the Great Britain Day Visits Survey (GBDVS) to calculate the total number of times each tourism and outdoor leisure activity had been completed, on all trips. An additional survey, run by Kantar-TNS (2015), was used to determine a ratio between overnight trips and day trips three hours and over in length, which determined the percentage of trips in which a specific outdoor-related activity was completed. These ratios, combined with activity data from GBDVS, could then be used to apportion the total number of tourism and outdoor leisure trips recorded from the Great Britain Tourism Survey (GBTS) and the International Passengers Survey (IPS) to each outdoor-related activity.

Location survey data from the GBDVS were then used to determine the proportion of times an outdoor-related activity was completed in a specific type of location: built-up, rural or coastal. This follows the expenditure methodology provided by Eftec, instead apportioning based on the number of trips completed, as opposed to the amount spent. The remaining habitat breakdown was determined following Eftec's expenditure approach.

The physical flow was calculated to determine the number of outdoor-related activities participated in annually. It can also be used with the expenditure data to determine which outdoor-related activities are more popular, and which are more valuable. The addition of physical flow data also makes the tourism and outdoor leisure natural capital accounts more comparable with the recreation natural capital accounts.

## **6 . Capital spend**

Many tourism and outdoor leisure activities require additional items, such as equipment, to enable that activity to occur. For example, golf clubs would either need to be rented or purchased for someone to go play golf. These items will have an associated cost, which could also be attributable to the natural environment. If rented, some of this cost will have been captured within the surveys used to generate the tourism and outdoor leisure natural capital account. However, survey respondents may already own the equipment required for their trip. Most of the amount spent on additional items required for specific outdoor-related activities will therefore not be present within the tourism and outdoor leisure expenditure estimates.

To determine the cost of additional items an imputed rent approach could be adopted. This would treat the use of the equipment during each trip as if it were being rented. A rental price would be considered for each item that enables or enhances each outdoor-related activity, giving an additional expenditure estimate for each trip. However, this approach currently has its flaws. Some luxury items may be bought not to be used, but instead to enhance the self-image of the owner. Furthermore, several tourism and outdoor leisure activity categories feature multiple outdoor-related activities. For example, adventure sports include skiing, snowboarding, rafting, canyoning and similar other activities. The proportion of survey respondents completing each individual activity is unknown, making it difficult to accurately estimate the value of equipment being used.

Because of questions surrounding the imputed rent approach, capital spend has currently not been implemented into the tourism and outdoor leisure natural capital accounts. Further work is needed to accurately measure capital spend in a sustainable way. However, recent advice from SEEA would preclude them from inclusion.