



## **Wales Pilot: Developing a statistical framework for Measuring Sustainable Tourism (MST)**

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### **1. Introduction**

In what follows we outline both the opportunities and issues that will be faced in the Welsh economy in the development of sustainable tourism indicators. In comparison to other cases being developed under the umbrella of UNWTO the Welsh case could be interesting given that other pilot cases are for nations, whereas Wales is a sub-region of the UK economy. Moreover, in terms of statistics and other resources, there is some evidence that Wales may be comparatively well blessed in terms of statistical provision i.e. the availability of tourism satellite accounts at the Wales level, which complement (but are not reliant on) the UK TSA.

In the remainder of this document we seek to achieve the following:

- To briefly describe the regional economy of Wales and the place of the regional tourism sector
- Outline the main policy and analytical questions surrounding tourism/sustainable tourism in the Welsh context
- Identify the key stakeholders who either have an interest in sustainable tourism, or which develop policy linked to tourism/environmental protection in the region
- Consider the data available to inform sustainable tourism indicators, and challenges in developing regional tourism sustainability indicators
- Recommendations for moving forward with the pilot case.

### **2. Welsh economy**

Wales is one of the poorest regions of the UK with persistent socio-economic problems. In 2005 Welsh gross value added (GVA) was an estimated £42.25bn growing to £54.34bn by 2014. Over the period 2005-14 the Welsh economy grew at a slower rate than the UK economy as a whole.

**Table 1 GVA and GVA per Head in Wales (Selected years)**

GVA £m	2000	2005	2010	2011	2012	2013	2014
UK	893,485	1,168,850	1,370,816	1,413,559	1,460,697	1,522,492	1,590,113

Wales	31,851	42,250	47,440	49,678	51,180	53,065	54,336
GVA per head £							73.6%
Wales	10,957	14,229	15,554	16,215	16,649	17,215	17,573
W.Wales	9,361	12,340	13,794	14,414	14,848	15,355	15,745
E.Wales	13,764	17,526	18,576	19,296	19,727	20,385	20,684

Source: ONS

At the start of the period in 2005 Welsh GVA per head was £14,229 which was an estimated 73.5% of the UK average. For the remainder of the period to 2014 (latest figures available from ONS) GVA per capita in Wales varied between 70.9% and 73.6% of the UK average. The persistence of these poor figures continues to be a real issue of concern for the Welsh Government. For West Wales and the Valleys the GVA per capita cap grows to around 36% for most of the period 2005-14. Parts of the Welsh economy that have the lowest GVA per head and significant employment gaps also have very low levels of tourism intensity (see Table 3 for indicative estimates for UAs), suggesting that improvement here could generate employment opportunities in slack economies. Regionally, elements of the economy supported by tourism demands have become more important because of falling activity areas in traditional sectors such as manufacturing (Table 2). Welsh manufacturing output and employment has been at high risk through much of period following the Credit Crunch.

**Table 2 Welsh employment (including self employment) Selected years**

	2005	2007	2010	2015	Growth 2005-2015 %
Primary	25,400	23,900	28,200	32,200	26.8
Energy and water	21,000	23,400	24,900	29,700	41.4
Manufacturing	192,000	173,600	136,400	154,600	-19.5
Construction	105,700	125,200	100,300	98,500	-6.8
Distribution, hotels, catering etc	254,200	255,100	237,700	264,400	4.0
Transport and comms	92,400	90,600	76,100	77,600	-16.0
Finance and insurance	130,300	129,200	143,000	166,000	27.4
Public sector	404,400	434,100	457,800	448,300	10.9
Other services	64,600	65,100	69,500	73,600	13.9
Total	1,290,000	1,320,200	1,273,900	1,344,900	4.3

Source: Derived from Annual Population Survey

Employment in selected sectors more strongly supported by tourism demands such as distribution, retail, hotels and catering, and other services has been resilient following the Credit Crunch. By 2015 employment in the large distribution, retail, hotels and catering sector was up 4% on 2005. Whilst recent Welsh (and UK) government messaging has focussed on the need to improve levels of value added, productivity and innovation in the economy, there has been little examination around how such targets might include more challenged economic areas where there are enduring problems around low skills and qualifications and disengagement from the labour market.

Turning to the size of the tourism economy, the Wales Tourism Satellite Account (TSA) suggests that total tourism spending in 2011 was £4.5bn, representing a Tourism Gross Value Added (GVA) of £1.8bn (around 4.4% of Welsh GVA) supporting 88,300 full time equivalent jobs. The total economic activity supported by tourism demand (after including the indirect effects) is an estimated £2.5bn supporting over 100,000 employment opportunities. Some parts of Wales have a relatively high dependency on tourism activity. For example, according to the 2011 TSA tourism related employment in Pembrokeshire and Conwy, accounted for nearly 1 in every 5 jobs (Table 3).

Welsh tourism is founded on an excellent natural capital base. The region covers an area of just over 20,000 km<sup>2</sup> and is 200 km wide and 250 Km from north to south. The south is characterised by flat coastal plains giving way to steep sided valleys, and the Black Mountains and Brecon Beacons in mid Wales. The highest mountains making up the Snowdonia range are located in the north. Wales has over 1300 kilometers of coastline, comprising sandy beaches interspersed with steep cliffs. Wales experiences a temperate maritime climate with the warmest months being May to August. A key issue for much of the tourism facing sectors in the region is working to extend the shoulder season.

Wales has three national parks; Snowdonia National Park, the Pembrokeshire Coast National Park in south west Wales and the Brecon Beacons National Park which extends across the southern part of Powys, the north western part of Monmouthshire and parts of eastern Carmarthenshire. There are also five Areas of Outstanding Natural Beauty. It is the first country in the world to inaugurate an uninterrupted, country-circling coastal walking path. The landscape provides opportunities for a full range of outdoor pursuits from water sports in the many rivers, lakes and sea coast, to mountaineering, caving, walking, biking, horse-riding and bird-watching activities.

Added to the above is a rich cultural heritage offer supported by an extensive network of national museums. Wales also boasts over 600 castles, the most significant of which are Cardiff, Caerphilly, Kidwelly, and Raglan in the south, and Conwy, Denbigh and Caernarfon in the north – Wales has Europe's highest ratio of castles to people. Cardiff, Wales's capital city, has a rich architectural history and high quality retail offer. Following some much needed regeneration the old Cardiff docklands area was transformed by the Cardiff Barrage impounding the Rivers Taff and Ely to create a large fresh-water lake. Cardiff Bay offers a number of high quality tourist attractions. The Bay also has 149 pubs, bars and nightclubs (18 of them on the waterfront), 73 restaurants and numerous hotels.

**Table 3 - Tourism Related Economic Activity in Wales 2007**

	UA GVA 2007 £m	% of Wales GVA	Tourism GVA (TGVA) £m	% of UA/Sub- regional GVA	FTE Jobs Supported	% of Welsh Tourism GVA	Tourism Economic Intensity (Wales=100)
Anglesey	897.0	2.2%	57.1	6.4%	2,500	3.2%	148
Blaenau Gwent	682.0	1.7%	11.3	1.7%	500	0.6%	39
Bridgend	1,928.0	4.7%	60.8	3.2%	2,700	3.4%	73
Caerphilly	1,597.8	3.9%	37.1	2.3%	1,600	2.1%	54
Cardiff	7,080.3	17.2%	220.0	3.1%	9,700	12.5%	72
Carmarthenshire	1,942.3	4.7%	74.3	3.8%	3,300	4.2%	89
Ceredigion	928.5	2.3%	93.0	10.0%	4,100	5.3%	233
Conwy	1,210.3	2.9%	148.3	12.3%	6,600	8.4%	286
Denbighshire	1,153.8	2.8%	84.0	7.3%	3,700	4.8%	170
Flintshire	2,262.1	5.5%	73.2	3.2%	3,200	4.1%	75
Gwynedd	1,777.7	4.3%	206.7	11.6%	9,100	11.7%	271
Merthyr Tydfil	645.9	1.6%	15.1	2.3%	700	0.9%	55
Monmouthshire	1,356.5	3.3%	45.2	3.3%	2,000	2.6%	78
Neath Port Talbot	1,692.7	4.1%	32.9	1.9%	1,500	1.9%	45
Newport	2,592.2	6.3%	57.9	2.2%	2,600	3.3%	52
Pembrokeshire	1,363.6	3.3%	149.9	11.0%	6,600	8.5%	256
Powys	1,601.0	3.9%	122.2	7.6%	5,400	6.9%	178
RCT	2,594.7	6.3%	52.9	2.0%	2,300	3.0%	48
Swansea	3,323.3	8.1%	109.5	3.3%	4,800	6.2%	77
Torfaen	1,231.1	3.0%	19.2	1.6%	800	1.1%	36
Vale of Glamorgan	1,392.1	3.4%	58.8	4.2%	2,600	3.3%	98
Wrexham	1,915.9	4.7%	37.4	2.0%	1,700	2.1%	46
<b>Wales</b>	<b>41,169.0</b>	<b>100%</b>	<b>1767</b>	<b>4.3%</b>	<b>78,000</b>	<b>100%</b>	<b>100</b>
West Wales & Valleys	22,968.8	55.8%	1152.3	5.0%	50,800	65.2%	117
East Wales	18,200.2	44.2%	614.7	3.4%	27,200	34.8%	79
Rural Wales	12,230.8	29.7%	980.8	8.0%	43,300	55.5%	187
Urban Wales	28,938.2	70.3%	786.2	2.7%	34,700	44.5%	63

Key Sources:

Input-Output Tables for Wales, 2003 &amp; 2007

Tourism Satellite Account for Wales 2007

Annual Population Survey 2008

Annual Business Inquiry 2008 (Part 1)

NOTE: All estimates Indicative only.

### 3. Policy and analytical questions around tourism and sustainability

During the 1990s analysis of the tourism sector in Wales was hampered because of inadequate information on its full contribution to the regional economy. While there was data available relating to volumes and spend there was no Tourism Satellite framework. This issue was addressed by Cardiff University in association with Visit Wales and the region had a rolling programme of TSA development

with the latest data available for 2011 (albeit only in summary; see Jones et al., 2003, 2007<sup>1</sup> for a description of the framework). The Welsh TSA has been used in combination with Welsh Input-Output tables to produce a Tourism Impact and Planning Model (TIPM) for Wales which is used by academics and Visit Wales, to explore the effects of shocks to the tourism economy and as a means of better understanding the development of the sector. TIPM enables an (albeit assumption-heavy) estimate of the indirect as well as direct economic impacts of new visitor or facilities. The model has been widely used, increasing visibility of the economic importance of such things as:

- The Wales Millennium Stadium
- The Wales Rally GB
- The 2012 Olympic Football
- The Heineken Cup Final
- Various regional museums and visitor attractions

The Welsh Input-Output framework also contains an environmental module which is integrated into TIPM (see Jones and Munday, 2009). This has meant that later iterations of the TIPM provide an accounting of the carbon-equivalent emissions of tourism in Wales, whilst an additional module estimates the (direct) emissions of visitors when travelling to and from Wales. The objective of this development was such that TIPM could respond directly to Visit Wales requirements to demonstrate how tourism can contribute to Welsh Government targets in respect of emissions reductions in devolved areas. In the Welsh case, we believe it is the regional TSA framework and further development of the TIPM which would be central for developing sustainable tourism indicators.

In research to date academic and other research around the Welsh TSA and TIPM framework has examined:

- The carbon footprint of elements of the Welsh tourism economy, and with this linked to regional government having a Sustainable Development duty. Much of this research has been in the context of comparing the regional economic effects of tourism to selected environmental effects in the region. A key issue in much of this research has been in establishing regional economic and environmental system boundaries through which to account environmental effects (see Jones and Munday, 2007; Munday et al., 2013), and establishing the trade-off between economic benefits of visitation for Wales and environmental costs.
- How far visitation from wider UK and overseas creates environmental externalities in Wales but economic benefits elsewhere, with research here exploring the regional import propensity associated with Welsh tourism consumption.
- Comparison of perspectives on the environmental effects of tourism from modified TSA accounts, to those provided by analysis of tourism using ecological footprinting techniques (Collins et al., 2007, 2013), and the value of using ecological footprinting in tandem with regional input-output analysis in examining tourism activity.
- Analysis of how visitation to major sports and other events in Wales create environmental externalities.

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<sup>1</sup> See also <http://gov.wales/docs/drah/publications/Tourism/100715tsajulyappeng.pdf>

- The elements of the natural resource offer in Wales that are connected to relatively higher levels of tourism value added.
- The impact on greenhouse gas emissions of different future tourism scenarios, including modal shift, stay-extension and renewable electricity supply (Jones, 2013)
- How different types of tourism activity impact upon ecosystem services in Wales, and how far changing patterns of agricultural land use create new opportunities for tourism in Wales.

**Table 3 – Climate Emissions from Tourism Related Economic Activity in Wales 2007**

	a	b	c	d	e	f	Total emissions
	Daytrip	1-3 Nights	4+ Nights	International	Business	Total	
<b>Total emissions within Wales by source (CO<sub>2</sub>e, tonnes)</b>							
i Private car fuel	1,479,000	101,000	242,000	73,000	21,000	1,916,000	
ii Train	80,034	32,591	33,926	15,755	10,974	173,279	
iii Bus/coach	78,204	31,846	33,150	15,395	10,723	169,318	
iv Electricity generation	174,966	71,249	74,168	34,443	23,990	378,816	
v Other sectors	296,196	120,615	125,556	58,307	40,613	641,287	
vi All	2,108,400	357,300	508,800	196,900	107,300	3,278,700	
<b>Total emissions to/from Wales by mode (CO<sub>2</sub>, tonnes)</b>							
vii Private car fuel	n/a	183,215	114,283	71,973	58,384	427,855	2,343,855
viii Train	-	9,180	4,234	11,354	8,860	33,628	206,907
ix Bus/coach	-	1,950	1,128	2,360	0	5,439	174,757
x Plane	-	5,530	1,998	462,908	7,586	478,022	856,838
xi Other	-	6,625	7,856	8,605	9,970	33,056	674,343
Total	-	206,500	129,500	557,200	84,800	978,000	4,256,700

#### 4. Identifying key stakeholders with an interest in sustainable tourism

A number of stakeholders in the public and private sector of the regional economy have interests in the connection between tourism activity and sustainability. Overarching is the Welsh Government. From the outset of devolution, the Welsh Government has sought to promote economic growth with an inherent sustainable ethos linking economic, social and environmental 'pillars' of sustainable development. There is support for developing a low carbon economy. The Welsh Government Sustainable Development duty filters down to bodies it funds including Visit Wales and Natural Resources Wales. The goals of the Welsh Government in terms of sustainable development are embraced in many different strategic documents (including *Wales: A Better Country* (2003) and the *Wales Spatial Plan* (2008)). For example, the latter had as a core principle to improve quality of life for citizens 'by integrating social, economic and environmental objectives in the context of more efficient use of natural resources', and makes specific reference to sustainable tourism and leisure opportunities.

The Welsh Government also has a series of headline sustainability indicators against which they report<sup>2</sup>. It is likely that any future developments surrounding sustainable indicators related to tourism activity would need to link through to this headline set. For example, current indicators include gross value added, employment, greenhouse gas emissions, and waste production. Building on this ethos, the Well-being of Future Generations (Wales) Act, passed in 2015, seeks to improve the social, economic, environmental and cultural well-being of Wales. The effect of the new law is public bodies listed in the Act must conduct their activities in a sustainable way, and particularly consider their impact on future generations. The Act also establishes a statutory Future Generations Commissioner for Wales whose role will be to guard the interests of future generations in Wales, and to aid public bodies in achieving their well-being goals. Tourism-relevant listed public bodies include the local authorities, National Park Authorities, Natural Resources Wales, and the National Museum of Wales.

Visit Wales is the Welsh Government's tourism team within the Department for Heritage to promote Welsh tourism and assist the tourism industry. It has a role to improve the quality of the tourism offer and provide a strategic framework for businesses to achieve sustainable growth, with the overall effect of improving social and economic well-being in Wales. Visit Wales provides many types of support to the tourism sector and this includes sustainability tools to help businesses reduce their carbon footprint and waste, use sustainable transport, and access green accreditation schemes. Visit Wales have formerly partnered the university in developing audits of potential sustainable tourism indicators for Wales, and could provide insights into how indicators could link to policy change.

Natural Resources Wales could be another important partner. It acts as the principal adviser on environmental and natural resource to Welsh Government, and to industry and the wider public and voluntary sector, and as a communicator about relevant issues. It also has a regulatory function protecting people and the environment including marine, forest and waste industries, and prosecuting those who breach the regulations. Importantly NRW manages 7% of Wales' land area including woodlands, National Nature Reserves, water resources, visitor centres, recreation facilities etc. The predecessor organisation to NRW, Environment Agency Wales, initially sponsored the research to develop environmental modules for the Input-Output tables for Wales indicating pre-existing interest in these areas.

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<sup>2</sup> See <http://gov.wales/statistics-and-research/sustainable-development-indicators/?lang=en>

There are many interfaces between NRW activities and tourism in Wales, since NRW seeks to preserve, improve and protect Wales' landscape. These activities include enhancing Wales' coastline, and its recreational resources (woodlands, reservoirs etc.) which are also major tourist attractions. NRW also works with other agents to create and preserve ecosystems.

Other bodies which provide services to the tourism sector within Welsh Government include Cadw which works to preserve ancient buildings and monuments in Wales.

Alongside the public sector is the Wales Tourism Alliance (WTA) launched in 1998. WTA and members provide a collective voice for the industry to Welsh Government and beyond. The WTA claims that it represents over 6000 tourism businesses in Wales (Deloitte & Oxford Economics; 2010). There are also a series of private sector organisations that market different Welsh regions to tourists including North Wales Tourism, and Mid Wales Tourism. Each local authority in Wales (of which there are 22) also has tourism marketing sections. There is little evidence to suggest any particular strategic tourism private sector interest in environmental issues. However, given that Wales's landscape is a strong selling point, and given the bias towards activity tourism, the private sector can and does seek to exploit these strengths for commercial reasons, giving strong emphasis to the landscape characteristics.

A number of new and existing structures and agents thus provide the opportunity to further activity in the sustainable management of tourism in Wales. Added to the Wales-level actors are new City Regions; coalitions of municipalities tasked with regenerating their regions. Here there is significant 'political space' and the potential to contribute evidence and intelligence to governance structures that are seeking to develop new, innovative and sustainable approaches to economic development.

## **5. Review of statistics, organisation of data, identification of sustainable tourism indicators**

As part of this scoping note we undertook a review of the data available in Wales to support the development of sustainable tourism indicators. Appendix 1 describes some key sources. In searching for data sources we specifically looked for:

- Economic activity data on tourism demand and the production of tourism characteristic industries (including employment, visitor numbers and accommodation capacity)
- Environmental data on resources used by tourism characteristic industries (e.g. water, energy) and residuals generated by tourism characteristic industries (e.g. carbon emissions, waste).
- Cultural and social data related to tourism activity. For example, numbers and visitation rates to cultural sites.

Several of the sources identified in the Appendix tables are identical to those used in developing the tourism satellite accounts for Wales. An overarching problem is that where environmental data is available, for example with respect to carbon emissions, waste etc. it is often published in a fairly aggregated way which makes it difficult to allocate to tourism-facing sectors without assumptions being made. Notwithstanding we believe that with the data available it might be possible in Wales to develop a series of sustainable tourism indicators.

In the Welsh case (and for UNWTO) we believe that the selection of tourism sustainability indices would need to consider a series of criteria/development factors.

- First we need to consider the perspective on sustainability provided by any indicators. Previous studies have shown that a proliferation of SD indicators has often been set besides different notions of SD (i.e. whether the approach is grounded in a 'weak' or 'strong' sustainability framework). For example, a strong sustainability framework identifies with the need to maintain a critical stock of environmental capital as a key goal. Consequently, in a 'strong' framework, the overall carrying capacity of the environment takes precedence. This means there is a direct trade-off between material well-being and environmental quality, such that policy should conserve a given stock of environmental assets as a priority (i.e. 'deep green position').
- Second is policy relevance and user utility. How far will the indicator be useful to Welsh policymakers/stakeholders? In the tourism case there might be a distinction between contextual indicators that might, for example, be useful for monitoring broader strategic objectives of a large number of tourism organisations, and influencable indicators, that might assist in monitoring or evaluating the progress of specific tourism programmes or tourism agencies. For Wales it is expected that a combination of approaches would be of value. Approaches to assess progress towards tourism sustainability objectives may also have additional value if they can be used and understood by other users and stakeholders, including firms, education establishments, and community organisations.
- Third is how far indicators provide clear information for policymakers – or whether ambiguous signals are given by the indicator. Transparency will also be important in the Welsh case. For example, can stakeholders understand the process through which the indicator is developed?
- Fourth is whether indicators being developed allow for some element of comparability, and this may be particularly important for UNWTO. The ability to benchmark progress on key approaches across regions or nations can be important. Systems of conventional national accounts which lead to indicators such as GVA per capita etc derive much of their value because internationally accepted construction methods allow comparability.
- Finally, and important during times of financial austerity, what are the costs and practicality of indicator construction? Selected approaches to measuring and monitoring tourism sustainability at the regional level could be very expensive or overly complex to develop. Costs are most likely associated with collection and validation of timely primary data, or in terms of time to process primary and other data.

The above noted we believe the statistical data already available on aspects of tourism demand and supply in Wales, together with the presence (of an albeit dated) set of tourism satellite accounts, would allow progress to be made in the development of basic indicators in terms, for example, of volumes of visitors, travel modes, visitation to selected sites under environmental pressures. To some extent data here is already regularly published in the Welsh economy.

Far more challenging is working towards indicators that link different types of tourism consumption to the externalities produced directly and then in the tourism supply side. For example, indicators here might address carbon equivalent emissions linked to tourism consumption in Wales, and waste streams attached to tourism-facing industries. Indeed some progress has already been made here in recent analysis in Wales of event-led visitation. However, we expect the largest challenges to be around tourist travel, and with prior analysis in Wales focusing on tourist emissions while in Wales, rather than looking at emissions linked to consumption outside of Wales but connected to the Welsh

visit. Arguably it might be taken that this is outside the area of Welsh Government responsibility, but the sustainable development duty of the regional government hints strongly at global as opposed to merely regional responsibilities (Munday and Roberts, 2006).

## **6. Next steps**

A series of next steps are as follows:

### **For the October Meeting:**

- The development of some examples of tourism sustainability indicator case studies
- Development of a presentation for UNWTO Madrid which highlights the issues in the Welsh case and recommendations for priority indicators and how/why they fit the criteria outlined in this paper.

### **Post-Madrid**

- Consultation with Visit Wales and other regional tourism stakeholders to reveal whether there is strong demand for further tourism indicators linked to sustainability, and where the priorities actually are. Here we expect there is some divergence between the research interests of the academic community in the region around fully carbon accounting tourism consumption set against practical requirements of Welsh Government and its sponsored bodies in reporting progress around headline adopted SD indicators.
- Integration of Tourism SD indicators and actions with the program of the Future Generations Commission and Future Generations Act
- Development (with regional partners) of an Ecosystems Management case study on tourism and water

## Appendix 1 Examples of Statistical Data Available

**Table 1 Sustainable Development Indicators**

Data Source	Data Description/Issues
Net greenhouse gas emissions by year <a href="https://statswales.gov.wales/Catalogue/Environment-and-Countryside/State-of-the-Environment/Sustainable-Use-of-Resources/NetGreenhouseGasEmissionsFromLULUCF-by-Year">https://statswales.gov.wales/Catalogue/Environment-and-Countryside/State-of-the-Environment/Sustainable-Use-of-Resources/NetGreenhouseGasEmissionsFromLULUCF-by-Year</a>	A greenhouse gas inventory sector that covers emissions and removals of greenhouse gases resulting from direct human-induced land use, land-use change and forestry activities.
Municipal waste per person per annum by year <a href="https://statswales.gov.wales/Catalogue/Environment-and-Countryside/State-of-the-Environment/Sustainable-Use-of-Resources/MunicipalAndHouseholdWastePerPersonPerAnnum-by-Year">https://statswales.gov.wales/Catalogue/Environment-and-Countryside/State-of-the-Environment/Sustainable-Use-of-Resources/MunicipalAndHouseholdWastePerPersonPerAnnum-by-Year</a>	Potentially can be linked to tourism numbers, and tourism-facing industries
Carbon dioxide emissions by source <a href="https://statswales.gov.wales/Catalogue/Environment-and-Countryside/State-of-the-Environment/Addressing-Climate-Change/CHART-CarbonDioxideEmissions-by-Source">https://statswales.gov.wales/Catalogue/Environment-and-Countryside/State-of-the-Environment/Addressing-Climate-Change/CHART-CarbonDioxideEmissions-by-Source</a>	Potentially can be linked to elements of tourism demand
Ecological footprint by year <a href="https://statswales.gov.wales/Catalogue/Environment-and-Countryside/State-of-the-Environment/Addressing-Climate-Change/EcologicalFootprint-by-Year">https://statswales.gov.wales/Catalogue/Environment-and-Countryside/State-of-the-Environment/Addressing-Climate-Change/EcologicalFootprint-by-Year</a>	Based on land area linked to Welsh consumption, but some potential to link to tourism consumption, and has been done in case of sports events and festivals in Wales
Trends in Biodiversity Action Plan by priority species and habitats <a href="https://statswales.gov.wales/Catalogue/Environment-and-Countryside/State-of-the-Environment/Distinctive-Biodiversity-Landscapes-and-Seascapes/TrendsInBiodiversityActionPlan-by-PrioritySpeciesAndHabitats">https://statswales.gov.wales/Catalogue/Environment-and-Countryside/State-of-the-Environment/Distinctive-Biodiversity-Landscapes-and-Seascapes/TrendsInBiodiversityActionPlan-by-PrioritySpeciesAndHabitats</a>	May provide information on priority species in areas subject to high tourism numbers

**Table 2 Tourism (Demand and Supply Side)**

<b>Data Source</b>	<b>Data Description</b>
Visitors to Tourism Attractions <a href="https://statswales.gov.wales/Catalogue/Tourism">https://statswales.gov.wales/Catalogue/Tourism</a>	Only from 2000 to 2009
National Survey for Wales, 2014-15 - Arts, museums and historic places <a href="https://statswales.gov.wales/Catalogue/Tourism">https://statswales.gov.wales/Catalogue/Tourism</a>	Examines visitation patterns and purpose
Tourist traffic to Wales by measure, purpose and year <a href="https://statswales.gov.wales/Catalogue/Tourism/TouristTrafficToWales-by-Measure-Purpose-Year">https://statswales.gov.wales/Catalogue/Tourism/TouristTrafficToWales-by-Measure-Purpose-Year</a>	From 1990 to 2010 Millions and by purpose
Tourism expenditure in Wales by purpose and year <a href="https://statswales.gov.wales/Catalogue/Tourism/TourismExpenditureInWales-by-Purpose-Year">https://statswales.gov.wales/Catalogue/Tourism/TourismExpenditureInWales-by-Purpose-Year</a>	£m and by purpose
Distribution of tourist traffic to Wales by trip type, transport mode and year <a href="https://statswales.gov.wales/Catalogue/Tourism/DistributionOfTouristTrafficToWales-by-TripType-TransportMode-Year">https://statswales.gov.wales/Catalogue/Tourism/DistributionOfTouristTrafficToWales-by-TripType-TransportMode-Year</a>	Important in context of tourism indicators because of emissions linked to travel
Overseas residents tourism to Wales by measure area of residence and year of travel <a href="https://statswales.gov.wales/Catalogue/Tourism/OverseasResidentsTourismToWales-by-Measure-AreaOfResidence-YearOfTravel">https://statswales.gov.wales/Catalogue/Tourism/OverseasResidentsTourismToWales-by-Measure-AreaOfResidence-YearOfTravel</a>	2003 to 2010 Numbers by origin Spending by Origin
Overseas residents tourism to Wales by measure, purpose of visit and year of travel <a href="https://statswales.gov.wales/Catalogue/Tourism/OverseasResidentsTourismToWales-by-Measure-PurposeOfVisit-YearOfTravel">https://statswales.gov.wales/Catalogue/Tourism/OverseasResidentsTourismToWales-by-Measure-PurposeOfVisit-YearOfTravel</a>	2003 to 2010 Visit spending/numbers by purpose
<b>Tourism Supply-side</b>	
<b>Data Source</b>	<b>Data Description</b>
<i>Annual Business Survey</i> Office for National Statistics	Estimates of output, value added, spending in tourism facing sectors in Wales available 2009-14
VAT registered business stock in Wales by industry and year <a href="https://statswales.gov.wales/Catalogue/Business-Economy-">https://statswales.gov.wales/Catalogue/Business-Economy-</a>	1994 to 2008 Hotels and restaurants

<a href="#">and-Labour-Market/Businesses/VAT-Businesses/VATRegisteredBusinessStockInWales-by-Industry-Year</a>	
<p>Business births, deaths and active enterprises in Wales by industry (SIC 2007), variable and year</p> <p><a href="https://statswales.gov.wales/Catalogue/Business-Economy-and-Labour-Market/Businesses/Business-Demography/businessbirthsdeathsactiveenterprisesinwales-by-industry-variable-year">https://statswales.gov.wales/Catalogue/Business-Economy-and-Labour-Market/Businesses/Business-Demography/businessbirthsdeathsactiveenterprisesinwales-by-industry-variable-year</a></p>	<p>2010 to 2014</p> <p>Accommodation and food services</p>
<p>Local Authority Tourism Profiles <a href="http://gov.wales/statistics-and-research/local-authority-tourism-profiles/?lang=en">http://gov.wales/statistics-and-research/local-authority-tourism-profiles/?lang=en</a></p> <p><a href="http://gov.wales/docs/statistics/2014/140902-local-authority-tourism-profile-comparisons-2010-12-en.pdf">http://gov.wales/docs/statistics/2014/140902-local-authority-tourism-profile-comparisons-2010-12-en.pdf</a></p>	<p>Due to relatively small sample sizes at local authority level, three-year averages have been used for results from the Great Britain Tourism Survey and International Passenger Survey (2010-12) and two-year averages for the GB Day Visits Survey (2011-12), which began in 2011.</p> <p>It is intended to update the series annually, using three year averages from the main surveys, in order to provide definitive tourism statistics at local level.</p>
<p>Headline condition of the tourism industry</p> <p><a href="http://gov.wales/docs/caecd/research/2016/160713-wales-tourism-business-barometer-wave-2-2016-en.pdf">http://gov.wales/docs/caecd/research/2016/160713-wales-tourism-business-barometer-wave-2-2016-en.pdf</a></p>	<p>Tourism Barometer</p>
<p>Wales Visitor Attractions Survey 2015</p> <p><a href="http://gov.wales/docs/caecd/research/2016/160721-visitor-attractions-survey-2015-en.pdf">http://gov.wales/docs/caecd/research/2016/160721-visitor-attractions-survey-2015-en.pdf</a></p>	<p>Survey of visitation to principle attractions in Wales</p>

## Selected References

Bryan, J., Jones, C and Munday, M. (2006) "The contribution of tourism to the UK economy: satellite account perspectives", *Services Industries Journal*, 26, pp 493-511.

Collins, A, Munday, M. and Roberts, A. (2012). Environmental consequences of tourism consumption at major events: An analysis of the UK stages of the 2007 Tour de France. *Journal of Travel Research* 51 (5), pp. 577-590. 10.1177/0047287511434113

Collins, A., Flynn, A, Munday, M and Roberts, A. (2007) "Assessing the environmental consequences of major sporting events: The 2003-04 FA Cup Final", *Urban Studies*, 44, pp. 457-476.

Collins, A., Jones, C. and Munday, M. (2009) "Assessing the environmental impacts of mega sporting events: Two options?" *Tourism Management*, 30, pp.828-837.

Jones C (2013) Scenarios for green house gas emission reduction form tourism: an extended tourism satellite account approach in a regional setting in *Journal of Sustainable Tourism*, 21, pp.458-472.

Jones C and Munday M (2010) "Tourism Satellite Accounts for Regions? A Review of Development Issues and an Alternative", *Economic Systems Research*, 22 (4), pp.341-358.

Jones, C and Munday, M. (2007) "Exploring the environmental consequences of tourism: A satellite account approach", *Journal of Travel Research*, 46, 2 pp164-172.

Jones, C. and Munday, M. (2004) "Evaluating the economic benefits from tourism spending through Input-Output frameworks: issues and cases" *Local Economy*, 19.2, pp.117-133.

Jones, C. and Munday, M. (2008) "Tourism Satellite Accounts and Impact Assessments: Some Considerations", *Tourism Analysis*, 13.1, pp.53-69.

Jones, C., Munday M. and Roberts A. (2009) "Top down or bottom up: Issues in the development of sub-national tourism satellite accounts". *Current Issues in Tourism*, 12, pp.301-13.

Jones, C., Munday, M. and Roberts, A. (2003) "Regional tourism satellite accounts: A useful policy tool?" *Urban Studies*, 40.13, pp. 2777-2794.

Munday, M. and Roberts, A. (2006) "Developing approaches to measuring and monitoring sustainable development in Wales: A review", *Regional Studies*, 40, pp.535-544.

Munday, M., Turner, Karen and Jones, Calvin (2013) Accounting for the carbon associated with regional tourism consumption. *Tourism Management* 36, pp. 35-44. 10.1016/j.tourman.2012.11.005