6

THE ENVIRONMENTAL IMPACTS OF TOURISM

CONTENTS

LEARNING OUTCOMES

After studying this chapter, you should be able to:

- understand the various ways in which tourism can impact on the environment
- identify and evaluate different approaches to finding solutions to the problems caused by these impacts
- understand the importance of sustainable tourism as it relates to the environment
- recognise how appropriate planning and cooperation between the private and public sectors can help to ensure sustainability.

> " The projected sustained growth of the tourism industry will present serious challenges to environmental protection. In general, the tourism industry produces adverse environmental impacts through its consumption of resources, the pollution and waste generated by the development of tourism infrastructure and facilities, transportation and tourist activities. In the absence of proper planning and management, tourism development can create strong competition for the use of land between tourism and other competing uses, leading to rising prices for land and increased pressure to build on agricultural land. (WTO, 1999: 10) "

INTRODUCTION

In this chapter, we explore tourism's impacts on the environment and consider the growing awareness of the need to become more sustainable. While the obvious focus will be on how tourism affects the environment at popular tourist destinations, we need to be aware at the same time that the rise in global tourism has environmental impacts that go far beyond those destinations alone. In fact, it is no exaggeration to say that tourism is a major contributor to the despoliation of the environment, notably as a result of transport's contribution to pollution, whether by air, sea or on land.

As tourism expands, so new destinations are put at risk; and twenty-first-century tourists are tending to seek out ever more remote areas of the globe.

EXAMPLE

Tourism in Antarctica

The Antarctic continent has become a regular target for mass tourism, with cruise ships that can carry up to 600 passengers visiting the peninsula on a regular basis and passenger-carrying ice-breakers calling as far south as Scott's and Shackleton's bases. Annual figures for visitors to Antarctica were a mere 6704 in 1992, rising to 12,109 in 2001 and peaking in 2007 at just over 45,000. The following seasons saw levels fall to around 35,000 annually but numbers have grown rapidly in the past five years to exceed 50,000 (Table 6.1). While some visitors only fly over the continent – often taking a flight to reach the South Pole itself – the majority (between 75% and 85% of all visitors) land in order to take part in some form of sightseeing or adventure activity, which may include seal and penguin watching, overnight camping, cross-country skiing or kayaking.

The popularity of the huge penguin colonies (perhaps partly attributable to the film *March of the Penguins*) has meant that some of the colonies are receiving as many as three visits every day, impacting on the birds' behaviour and breeding patterns.

There have also been a number of issues with the vessels themselves. In 2007, the MS NordKapp was involved in a minor accident, and later that year 150 passengers and crew were airlifted from the MV Explorer before it sank in the Antarctic Ocean after hitting an iceberg. In 2009, the Ocean Nova ran aground off the coast of Antarctica, with 65 passengers evacuated

TABLE 6.1   Visitors to Antarctica

Time period	Total		Time period	Total
1999–00	14,623		2012–13	33,962
2003–04	24,318		2013–14	37,044
2006–07	45,652		2014–15	36,271
2008–09	37,573		2015–16	38,069
2009–10	36,642		2016–17	43,915
2010–11	33,438		2017-18	51,707
2011–12	26,003		2018-19	55,764

Source: International Association of Antarctica Tour Operators (IAATO) 2018

for their own safety. The biggest concern is that some vessels were not built to withstand the environmental conditions, making them vulnerable in this inhospitable environment.

Managing these issues is complex. The region is without recognised territorial sovereignty and, as a consequence, regulating tourism has to be achieved through collective agreement. Members of the International Association of Antarctic Tour Operators (IAATO) have adopted a voluntary code of practice to minimise the impacts of visitors, including limiting the number of passengers at any one site to 100, and restricting how close they may approach the penguin colonies. Guidelines to reduce the likelihood of introducing non-native species have also been produced. The difficulty, however, is in policing the many different policies and rulings.

In other ecologically sensitive regions, such as the Galapagos Islands, Costa Rica and Belize, the development of tourism is also controlled, and efforts are made to ensure that all visitors respect the natural environment. The pressures of demand are difficult to resist, however, when the economic benefits to less-developed countries are significant. While in 1974 the authorities set an original target of 12,000 visits to the Galapagos (later revised to 40,000), visitors now number around 225,000 annually, and the ceiling has been to all intents and purposes abolished. The burgeoning tourism industry has attracted residents, mostly from mainland Ecuador, leading to an increase in population level from 5000 in the 1960s to more than 25,000 today. However, despite tourism contributing almost $100 million to the economy, poverty is still a very real issue for many living on the island.

THE ENVIRONMENTAL EFFECTS OF TOURISM

TRANSPORT POLLUTION

Large-scale tourist movement requires the use of mass transportation, particularly by air, and, while aircraft are now twice as fuel-efficient as they were four decades ago, air travel has increased tenfold in that time. In 2010, this resulted in more than 5 billion Revenue Passenger Kilometers (RPK is the number of kilometres flown multiplied by the number of passengers on board), and it is estimated that this figure will increase to 40 billion by 2042 (ICAO, 2016).

Apart from emissions of nitrous oxides (unfortunately, the introduction of quieter, more fuel-efficient and cleaner jet engines has the side-effect of increasing those emissions), these aircraft currently pump carbon dioxide into the upper atmosphere. According to the International Civil Aviation Organization (ICAO), aircraft emissions account for 2%

of all man-made CO2 emissions. The total emission from aviation worldwide is roughly equivalent to that produced by the whole of Germany.

One EU study in 2004 claimed that air travel was responsible for 9% of all global warming, while an article three years later (Gössling and Peeters, 2007) asserted that for European residents, air travel accounted for less than 20% of trips but almost 80% of the greenhouse gases released by tourism-related transport. Emissions are made worse by congestion that leads to stacking over airports and the resultant fuel waste, a problem that is likely to grow as air corridors become more crowded. The rapid expansion of the low-cost airlines, operating on short-haul routes, accounts for a sizeable increase in pollution figures, given that one-fifth of a short-haul aircraft's fuel load is burnt in take-off and landing.

Yet in spite of the clear threat to world health, aviation fuel remains largely untaxed. Fuel taxation was ruled out at the 1944 Chicago Convention in order to boost the post-war airline industry, and even VAT has not yet been applied to airline tickets, in spite of protests from environmentalists. Aviation is specifically exempted from the Kyoto Protocol on climate change.

There has been some success in encouraging the airline industry to take greater responsibility for the pollution created. After years of negotiations, an international agreement has been reached that seeks carbon-neutral aviation growth in the 2020s. This would be achieved through offset activities such as tree planting to soak up the CO2. It would also require airlines to purchase offsets if allowances are exceeded.

Interestingly, the growth of high-speed rail routes across Europe in recent years has led more business travellers to switch from air to train travel, as companies begin to monitor (and offset) their carbon impact.

Other forms of tourism transport make their own contributions to pollution. More than 400 passenger ships now ply world cruise routes, carrying in excess of 28 million passengers each year. The US Environmental Protection Agency (EPA) estimates that, apart from the daily fuel burn, an average cruise ship with 3000 passengers generates some 21,000 gallons of sewage each day – not all of it properly disposed of. Indeed, several leading cruise companies have been prosecuted in recent years for pollution of the seas and rigging instruments to deceive inspections. Waterborne vessels of all kinds, whether on the high seas or on inland rivers, lakes and canals, by cleaning out their tanks or dumping waste overboard, significantly contribute to water pollution, which, in turn, impacts on aquatic wildlife. Even without such illicit dumping, the sheer number of cruise vessels plying popular waterways such as the Caribbean poses a threat through leakages and congestion at key ports. Bermuda is one of several islands now imposing restrictions on the number of cruise ship visits permitted each year.

EXAMPLE

Cruise ship emissions

The expanding demand for cruises has seen expansion in both number and size of ships to serve these markets, and in consequence this sector of the industry is causing ever greater levels of environmental pollution. Maritime fuel is one of the dirtiest and most polluting of all diesels, churned out both at sea and when berthed. While in port and close to US and some European coasts, ships are required to burn low-sulphur fuel; newer ships now include pollution control equipment to further reduce emissions. Despite this, marine pollution analysts in Germany estimate that a large cruise ship burns 150 tonnes of fuel a day and emits more sulphur than several million cars.

Sources: McVeigh, 2017; Vidal, 2016

Inland waterways are, if anything, even more fragile and endangered than coastal waters as a result of excessive use by waterborne leisure transport, whether private or public. Apart from the danger of pollution caused by fuel or oil leaks in rivers, lakes and canals, unless strict speed limits are enforced, riverbanks may be damaged or undermined by the wash from passing boats, causing soil erosion and endangering wildlife.

EXAMPLE

Venice

Venice, with its network of canals, receives up to 20 million visitors every year (Kington, 2009). Most are transported by water during their stay and gondola trips are an expensive but popular form of excursion.

The city is slowly sinking, and its paved areas are subject to frequent flooding. As public transport on the canals is largely motorised, the wash from these vessels is contributing to undermining the foundations of many historic buildings. The Italian government has given Venice the power to limit motorised transport, introduce speed limits and tolls on tourist boats and establish 'blue zones' where transport is limited to gondolas and rowing boats.

It is estimated that 70% of the tourists are day trippers, arriving by bus, car, train and, increasingly, cruise ship. A ban on cruise ships travelling through the lagoon close to the city was overturned in 2014 but the cruise industry has agreed to voluntary restrictions that will keep the very largest of vessels away from this fragile area. However, with 650 ships and 1.8 million passengers passing though the city every year, the environmental impact remains significant.

Finally, account must also be taken of the impact of the many millions of motorists using private and hire cars for their holidays and short breaks. While congestion is the more visible problem arising from the expansion in the numbers of vehicles at popular tourism destinations, pollution resulting from the concentration of exhaust gases in both city and rural tourist destinations can seriously affect the health of tourists and residents alike. The uncontrolled expansion of private vehicles in key tourist cities such as Bangkok can so adversely affect the visitor experience that it threatens to discourage visitors from either travelling there or staying in the city.

A significant proportion of the petrol purchased all over the world is for leisure purposes, whether for touring or day trips; and in some regions the exhaust fumes from these vehicles, when added to those from local traffic, can damage the clean air that is the prime attraction for tourists. This is particularly true of mountainous destinations, where not only touristic appeal but also even plant and animal life can be adversely affected. Some popular mountain resorts, such as Zermatt in Switzerland, have banned non-residential private vehicles from the town, requiring tourists to use park and ride services or rack-and-pinion railways into the resort. The latter provide a picturesque additional attraction to visitors staying there.

The popularity of off-roading with sports utility vehicles (SUVs) is also damaging to the environment in sensitive areas of the world. This sport is popular among American tourists, and some wilderness areas are now under threat, particularly in Utah. Moab, south-east of Salt Lake City, has attracted significant numbers of such vehicles, as have sand dunes in several parts of the world, where these vehicles can destroy sparse scrubland and erode the landscape.

NOISE POLLUTION BY TRANSPORT

All motorised forms of road, sea and air transport can intrude on the calm of a resort by raising noise levels, whether in rural surroundings or in residential areas, and this, too, must be considered a form of pollution.

Aircraft taking off and landing at busy airports severely disturb local residents and tourists alike. Authorities have long recognised the problem of air traffic noise and action has been taken to reduce it. The problem is compounded for night flights, where restrictions are often in force to reduce the problem. Noise limits were first set at Heathrow in 1959 and were applied to Gatwick in 1968 and Stansted in 1993. Although night flights are not banned (except for the noisiest types of aircraft), restrictions are imposed on the number of night departures and arrivals (Butcher, 2017). Noise at airports is an issue for many countries; in India, all airports are still obliged to accept jumbo aircraft throughout the night. Noise-related issues at Zurich airport have also led to heated debates between the Swiss and German governments, as flights into and out of this Swiss airport often follow routes over German territory.

Noise from waterborne vessels is most notable along coasts and in tranquil rural areas where boats using their motors can disturb the peace of the night when travelling along rivers and canals. New waterborne vehicles such as jet bikes and water bikes, often used offshore at popular beach resorts, are particularly noisy, and this (coupled with possible danger to life) has been a factor in attempts to reduce their use offshore at popular Mediterranean resorts.

POLLUTION AT TOURIST DESTINATIONS

Noise pollution that is caused by tourists further compounds the negative impacts of the industry. Tourists visiting national parks and wilderness areas can disrupt wildlife behaviour to an extent that the natural soundscape is hard to appreciate. At the Treetops Hotel in Kenya's Masai Mara National Park, animals visiting the adjacent waterhole at night are driven from the site by the careless loud talk or laughter of a minority of the visitors waiting to see them.

Cities and towns are affected by the cumulative effect of human conversations, shouting and laughter, with the peace of the night also frequently disrupted by late-night music clubs and bars catering to younger tourists. In some resorts, authorities have recognised the danger of negative publicity driving away the family market, and authorised the police to undertake night patrols to combat excessive noise. One such example is Magaluf in Majorca, where police act against pubs or nightclubs registering noise levels higher than 65 decibels. Building construction in fast-developing resorts can also be both visibly and audibly offensive.

EXAMPLE

Noise pollution caused by tourism

The Spanish holiday island of Ibiza has seen protests against the impact of overtourism. In 2017, the island saw the arrival of more than 3 million visitors, far in excess of the 130,000 population. The island is famed for its hedonistic lifestyle and all-night parties, an issue that has concerned local residents because of a parallel rise in crime and noise pollution. One speaker at a protest rally on the island stated, 'We don't reject tourism but we do reject tourism which is unlimited, disrespectful and excessive'. Efforts have been made to curb noise pollution through the introduction of an acoustic protection zone that has set a curfew, requiring outdoor clubs to shut by midnight and other clubs to close by 3am. Restrictions on food outlets also mean customers can only be served inside the premises after 11pm, limiting the use of outdoor terraces late at night.

Source: Dickinson, 2018

The physical pollution of popular destinations poses a growing threat for global tourism. Perhaps the most widespread example is seen in coastal resorts, where beach and offshore water contamination is visible and, in some cases, can be life-threatening to bathers. Across the EU water quality varies, although there have been efforts to encourage improvements across the region. Around 85% of bathing water sites have achieved an 'excellent' rating, with Luxembourg sites achieving 100% at this level, while at the other end of the spectrum only 44.2% of Bulgarian sites have received this rating. Italy, France and Spain have the highest total percentage of sites earning a 'poor' quality rating.

EXAMPLE

Clean water in Europe

The European Union annually reports the quality of bathing waters, both coastal and inland, within the region. Each year, samples of water are taken and countries monitor concentrations of two microbiological factors – intestinal enterococci and Escherichia coli (also known as E.coli). Figure 6.1 shows the percentage of bathing waters meeting excellent standards for each European country.
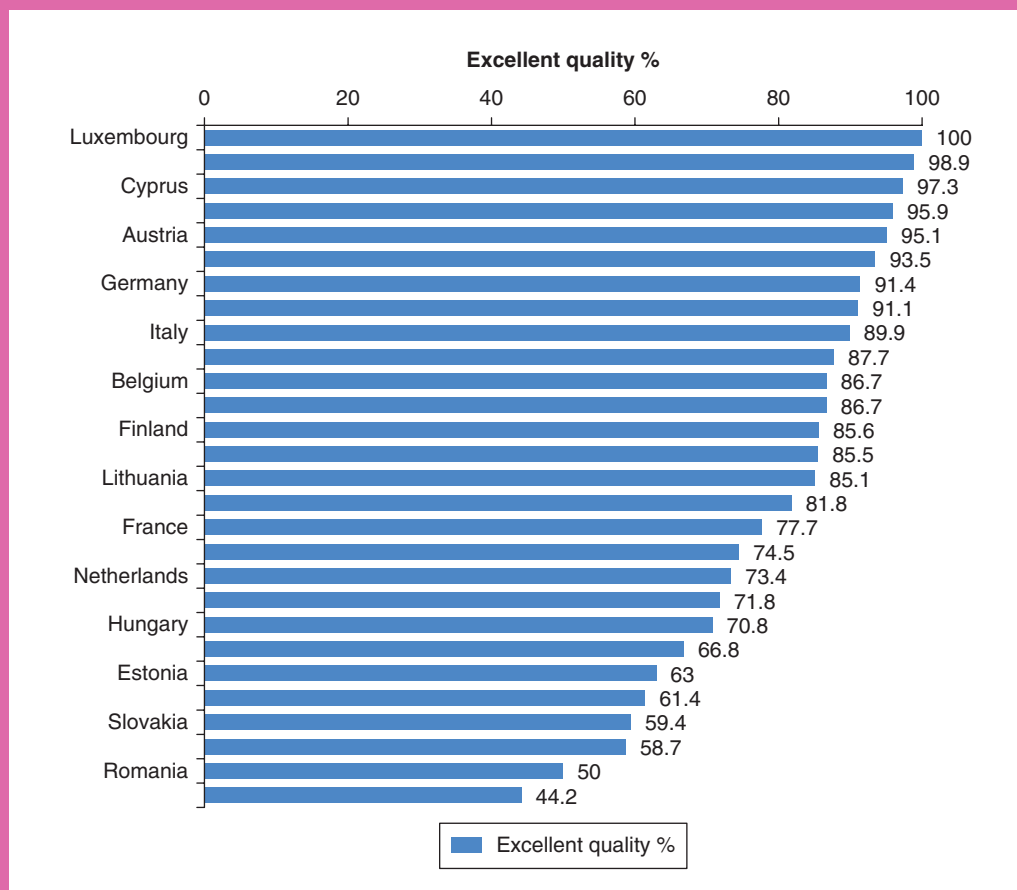
Excellent quality %

Country	Value
Luxembourg	100
	98.9
Cyprus	97.3
	95.9
Austria	95.1
	93.5
Germany	91.4
	91.1
Italy	89.9
	87.7
Belgium	86.7
	86.7
Finland	85.6
	85.5
Lithuania	85.1
	81.8
France	77.7
	74.5
Netherlands	73.4
	71.8
Hungary	70.8
	66.8
Estonia	63
	61.4
Slovakia	59.4
	58.7
Romania	50
	44.2

Excellent quality %

FIGURE 6.1   Bathing water quality

Source: European Environment Agency (EEA), 2018

Beaches in the UK are monitored in several ways. Key certification is in the hands of the environmental charity 'Keep Britain Tidy', awarding blue flags to beaches and bathing water satisfying certain minimal criteria, including water purity and freedom from litter and other pollutants on the beaches themselves. More criteria are applied to beaches qualifying as resorts rather than rural, but both require the beaches to meet at least the mandatory standards of bathing water applied in the EU. The Blue Flag campaign operates in some 45 countries in Europe, Japan, Africa, North and South America and the Caribbean. In 2018, more than 4500 beaches and marinas achieved this award.

VISUAL POLLUTION

Environmental pollution is as much aesthetic as physical. An area of scenic beauty attracts greater numbers of tourists, so more and more of the natural landscape is lost to development, the countryside retreating because of the growth in hotels and other amenities that spring up to cater for tourists' needs. The eventual result is that the site is no longer seen as 'scenic' and the tourists move on to find somewhere more tranquil as well as beautiful. Similarly, without careful control, stately homes that try to meet the needs of visitors provide an ever-expanding range of facilities, such as larger car parks, cafés, shops, directional signposts and toilet facilities, all of which detract from the appeal of the main attraction. Extreme examples of despoliation of the scenery by signposting are readily found in the USA where both countryside and towns can be destroyed by directional signs and advertising hoardings (however, some might argue that, at night, the forest of illuminated signs in towns like Reno and Las Vegas are very much part of the attraction of the resort).

Another aesthetic form of visual pollution is illustrated by the frequent insensitivity in the design of tourist buildings. Lack of planning control is often to blame, as developers prefer to build cheaply, resulting in high-rise hotels lacking character and being out of keeping with the surrounding architecture. In seaside resorts around the world, the concrete skyscraper hotel has become the norm. From Waikiki in Hawaii to Benidorm in Spain, tourists are confronted with architecture that owes nothing to the culture or traditions of the country in which it is found.

Some far-seeing authorities have recognised the potential for this kind of damage and brought in controls to limit it. In some cases, this has led to an insistence that hotels be built using local materials or conform to the vernacular architecture; that is, styles indigenous to the region. Others require that buildings do not exceed a certain height. For example, Tunisia established development regulations which required that new hotel developments in tourist resorts should be no higher than the normal height of the palm trees that surround them. Similarly, the tourism development framework for Oman sets limits on the height of tourism construction in seaside and mountain resorts. Mauritius imposes constraints on both the architectural style and the materials employed in hotel building. While some critics have questioned the rather 'staged' results, with thatched cottages vaguely resembling African kraals, no one doubts the appeal these accommodation units have for tourists. Such legislation clearly must apply to all buildings, not just those for tourism.

EXAMPLE

Visual pollution damaging to tourism in Cyprus

The Larnaca Tourism Board announced that it was having some success in reducing the visual pollution caused by ugly advertising hoardings. The city's strategic tourism plan, which

aims to achieve a quality tourism destination, suggests that visual pollution has a direct impact on the Cypriot tourism product. Initiatives across the city have been implemented to upgrade and standardise the design of signage to reduce the cluttered appearance of road junctions and civic squares.

Source: Christou, 2018

Sometimes, planning controls have the effect of restricting innovation in architecture, leaving developers to play it safe by falling back on pastiche or bland designs, attractive only to the most conservative visitor. The attempt to protect local building styles and materials can sometimes have unexpected results, as in Ireland. Roofs traditionally made of corrugated iron have now become such a familiar feature of the landscape that this has been designated a vernacular building material.

Tourists enjoying the landscape of Lanzarote, in the Canary Islands, have much for which to thank local artist César Manrique. He had a major influence on the planning regulations for the island, recognising that tourism's potential could best be fulfilled by sympathetic development. Thus, all housing, apartments and hotels are required to conform to rigorous building regulations imposed by the Department of Tourism on the island. These control not only the style of the buildings but also the colours in which doors and windows may be painted – only white, blue or green paintwork is permitted.

Sometimes, the problem of scale can relate to buildings far smaller than hotels, but it is no less significant. During the early 1990s, the Haworth Parsonage, once the home of the Brontë sisters on the Yorkshire Moors, was threatened with a massive expansion of the visitors' centre, which would have greatly exceeded the size of the original house. The project resulted in an outcry from the public and a rethinking of the plans. The problem of providing sufficient room to accommodate all the visitors – some 80,000 a year in the case of the Bronte Parsonage – at such a small site is a common one and there is no easy, or at least cheap, solution. One plan proposed at Haworth was to conceal the new visitor centre underground, which, although an ideal solution, proved to be too costly for the available funds.

Other common forms of visual pollution by tourists include littering, particularly in areas around picnic sites, and graffiti on buildings. It is a curious fact that even those tourists who come from large cities, where they are so used to seeing litter that they become unconscious of it, immediately become sensitive to litter in a tourist destination.

Resorts that have made the effort to improve their image in recent years tend to start by undertaking a drive against both rubbish in the streets and graffiti on buildings. An important point here is that litter bins should be not only readily available but also attractively designed. Unfortunately, at some sites the fear of terrorist bombs or vandalism has caused rubbish bins to be removed, making rubbish disposal more difficult for tourists.

In environmentally sensitive areas of the world, such as wilderness regions, littering becomes a critical issue because these areas are too far from any public services that could resolve the problem, so the onus is on tourists themselves to safeguard the environment by taking their rubbish with them. This is a very real issue in the Himalayas, now that trekking has become so popular in the region. Many trekkers and organised trekking parties are failing to carry out their litter or dig latrines to hide human waste, with the result that some valleys have become littered with unsightly rubbish, much of which is slow to decompose at the high altitudes there. Environmentalists and enlightened tour operators are encouraging visitors to ensure that their rubbish is either burned or carried out (although local villagers often make use of tins, bags or bottles left behind) and

human waste is buried. The authorities are being encouraged to build more permanent composting toilets in frequented areas, using the twin vault principle – each vault being used in alternate years to allow waste to decompose. Nutrients from composted waste can then be used to encourage rapid growth of willow trees, providing a much-needed source of timber for local villagers.

Graffiti has become a common problem in the Western world, with thoughtless tourists desecrating ancient monuments with spray-painted, scratched and even chiselled messages. This, of course, is no new development: the Romans were chiselling their names on Greek monuments 2000 years ago. The sheer scale of modern tourism, however, has forced authorities to take action. In extreme cases this had led to denial of access, as in the case of Stonehenge, where visitors are no longer permitted to walk among the stones themselves, but must be content to view them from a distance.

PROBLEMS OF CONGESTION AND EROSION

Perhaps the most self-evident problem created by mass tourism is that of congestion. In the previous chapter, we considered some of the social implications of overcrowding for tourists and, in this chapter, we will be equally concerned with the effects of overcrowding, in particular on the natural environment. Awareness that the number of tourists in an area was finite led to a consideration of **carrying capacities** – the number of people an area can hold before the impacts caused are beyond recovery. Extensive academic research has explored the concept of overcrowding, especially within recreational settings, and, as a consequence, planning frameworks take into consideration the concept of the Limits of Acceptable Change (LAC). Stankey et al. (1985), in their introduction to the approach, commented that the LAC is a reformulation of the carrying capacity concept, emphasising the conditions desired in an area rather than the total use an area can tolerate. While there has been much criticism highlighting difficulties with the implementation of such an approach, its conceptual ideas have underpinned much of the protection that has occurred since (McCool and Lime, 2001).

Carrying capacity

Congestion is a complex problem because it exists at both a psychological and a physical level. The latter is more easily measured, in terms of the capacity of an area to absorb tourists. Car parks, streets, beaches, ski slopes, cathedrals and similar features all have a finite limit to the number of tourists that they can accommodate at any given time. Theoretically, this is also true of entire regions and countries, although defining the tourist capacity of a city or country has seldom been attempted. Most national tourist offices continue to develop policies aimed at creating an ever-expanding influx of tourists year on year, with little consideration for the ability of the areas to absorb those numbers, although some efforts may be made to divert these influxes to off-peak periods or to less crowded areas of the country. At the urban level, a few cities under extreme pressure, such as Florence and Venice, have taken action to control arrival numbers, including limiting access. This can, of course, lead to disappointment for tourists. In recent years, crowds visiting the Uffizi Gallery and Galleria dell'Accademia (the site of Michelangelo's David) in Florence during peak holiday periods have become so great that the local authorities have had to take the unusual step of temporarily closing the buildings. Indeed, both Florence and Venice face exceptionally heavy demand from international tourists, the latter welcoming 19 million tourists to the Veneto region annually, with about half visiting the city itself. The authorities have responded by reducing coaches to the city from 500 to 150 a day, charging them high fees for the privilege and spot-checking arterial roads out of the city to enforce compliance.

The rapid escalation in deployment of mega-ships calling at popular coastal destinations has made management of such sites critical. Dubrovnik, a key port for these vessels, can witness four or more such vessels daily, disgorging over 12,000 passengers at a time into its narrow streets, resulting in pedestrians squeezing shoulder to shoulder in their efforts to visit shops and restaurants; in Venice, too, the influx of cruise visitors has resulted in massive congestion in the main shopping streets. The inevitable reaction of local populations is a clear indication of stage 4 in Doxey's Irridex model, described in Chapter 5 (Figures 6.2a and 6.2b).

FIGURES 6.2a and 6.2b   Antagonism towards big ship cruising is now widely evident in destinations like Venice

Photos: Chris Holloway

EXAMPLE

Manipulating demand at the Taj Mahal, India

Another tourist site suffering from extreme popularity is the Taj Mahal in India, with some 7 million visitors a year. The palace receives up to 50,000 tourists a day, during peak periods. Since 1995, a price differential was introduced, with higher entry charges for foreign visitors; in 2018 the entry fee for foreign tourists was 1000 rupees (around £11), with a reduced fee of 530 rupees (£5.80) for citizens from the South Asian Association for Regional Cooperation (SAARC) and the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSEC) countries (which includes Bangladesh and Sri Lanka), while Indian tourists pay 40 rupees (less than £0.50). However, such unique sites are highly price inelastic, thus only a rationing system is likely to limit demand.

   Further efforts to manage congestion have seen the Indian government impose a three-hour limit to the time who visitors can spend at the site. It is managed through a timed-ticket system, with visitors who exceed the three-hour limit required to buy a new ticket.

Source: O'Shea, 2018

It is also necessary to understand the psychological capacity of a site – that is, the degree of congestion that tourists will tolerate before it starts to lose its appeal. Quantifying this is far more difficult than physical congestion as individual perceptions of capacity will differ, not only according to the nature of the site itself but also the market attracted to it. Expectations of a remote island paradise will mean that a beach in, say, Fiji will be judged overcrowded much more quickly than, say, a beach in the UK at Bournemouth, while in a resort such as Blackpool a much higher level of crowding may be tolerated, even welcomed, as part of the 'fun experience'.

One attempt to measure the psychological capacity of a beach was carried out at Brittas Bay in Ireland in the early 1970s. Aerial photographs were taken of the number of

tourists on the beach on a crowded Sunday afternoon and a questionnaire was circulated to those on the beach to receive their views about the congestion that day. It was found that most visitors would accept around 1000 people per hectare (10 square metres per person) without feeling that the beach was overcrowded.

EXAMPLE

Exceeding carrying capacity

Examining tourism carrying capacity can highlight areas that are under pressure, but finding solutions is more problematic. For three beaches in the Brazilian Amazon region – Colares, Maruda and Murubira – the physical and effective carrying capacity was calculated (taking into account physical, environmental and ecological factors as well as the infrastructure and services available). Following this, the actual numbers visiting the beaches were assessed through hourly counts of the central portion of each beach. Findings revealed that while numbers at Colares beach were easily within the effective carrying capacity, and visitation at Maruda beach exceeded levels by approximately 9%, Murubira beach was suffering under the weight of visitor numbers almost three times the level of the effective carrying capacity.

Although the researchers concluded that such excessive visitor numbers means coastal management measures are necessary to address the impact on the environment, experience from other regions of the world suggests that achieving a response is often problematic, because finding a way to limit numbers in a manner that is acceptable to tourists, the tourism industry and the local population is complex; few local governments are likely to have the political will to impose measures that could potentially damage the economic development of tourism.

Sources: Butler, 2010; Sousa et al., 2014

In so-called *wilderness* areas, of course, the psychological capacity of the region may be very low, while areas sensitive to environmental damage may suffer physically even where there are comparatively few visitors. In the USA, Yellowstone and the Everglades National Parks are both physically under severe threat from tourism. Psychologically, too, they are so remote that any mass tourism will greatly reduce their attractiveness. An extreme example is that of The Wave (see Example box).

EXAMPLE

The Paria Canyon-Vermilion Cliffs Wilderness

The Wave is a rock feature situated in one of the most remote sites in the USA, involving visitors in a 3-mile trek across the Colorado Plateau desert region. The sandstone formation is, nevertheless, of enormous appeal to photographers from all over the world; however, the sensitivity of the region is such that access is limited to just 20 visitors a day, ten of whom are selected months in advance by a lottery run by the US Bureau of Land Management. The remaining ten passes are issued daily, starting at 9am, with visitors again chosen by lottery at the site.

Source: 'The wonder of The Wave', *Sunday Times*, 30 June 2013, p. 3

The behaviour of tourists at wilderness sites will be a factor in deciding their psychological capacity. Many visitors to an isolated area will tend to stay close to their cars, so hikers who are prepared to walk a mile or so away from the car park will readily find the solitude they seek. This is obviously a key for tourism planners, as, by discouraging or forbidding car parking and access by vehicle to the more remote areas, they can then effectively restrict entry to these areas to those seeking solitude.

Some authorities have tried to set standards for particular types of tourist activity as a guide to planners. Table 6.2 is based on one attempt, by the UNWTO (then, WTO), to lay down guidelines in terms of visitors per day per hectare.

TABLE 6.2   Visitor capacity of selected sites

Site/activity	Visitors per day/hectare
Forest park	15
Suburban nature park	15–70
High-density picnicking	300–600
Low-density picnicking	60–200
Golf	10–15
Fishing/sailing	5–30
Speedboating	5–10
Waterskiing	5–15
Skiing	100 (per hectare of trails)
Nature trail hiking	40 (per kilometre)
Nature trail horse riding	25–80 (per kilometre)

Source: Inskip, 1991

The *ecological* capacity to absorb tourists must also be taken into account. While too many tourists in a built-up area can detract from tourism, the physical wear and tear on the environment is limited – at least, in the short term. Too many tourists in a rural or otherwise fragile environment, however, can destroy the balance of nature. This can be seen in the increase in tourists visiting African safari parks, where the number of vehicles hunting for the 'big five' at any one time can resemble a car rally in some areas of the parks.

Erosion

Some sites are particularly fragile. Many sand dunes have been destroyed or seriously eroded in the USA by the use of beach buggies and by four-wheel drive vehicles. In the UK, similar problems are thrown up by motorcycle rallying, which can easily uproot the few clumps of dune grass on which an ecosystem depends. It has been reported (European Environment Agency, 2001) that three-quarters of all sand dunes along the Mediterranean coastline between Spain and Sicily have disappeared as a direct result of the growth of tourism.

EXAMPLE

The Dune du Pilat

Located on the Atlantic coast of the south-west of France, this sand dune is the largest in Europe. It is estimated to be over 100 metres high and 500 metres wide, spanning some 2.7 kilometres of coastline. This natural phenomenon is not a static entity. The wind and tidal movements mean that the dune is constantly moving inland, by several meters each year. Consequently, it has eroded large areas of adjacent pine forest, while at the same time swallowing up some nearby camping sites.

In recent years, improved infrastructure, including enhanced highways, expanded car parks and the development of a visitor centre, has made access to the site more convenient. As a consequence, more than a million visitors annually come to see and climb the sand dune. However, the height of the dune means that walking to the top can be physically taxing. Aware of the impact this may have on some, perhaps less fit and mobile, tourists, the managers of the site have installed a staircase which helps ease the climb to the top.

Management of this unique site is the preserve of a public body representing the local commune (La Teste de Buch), the district council (Gironde) and the regional council (Nouvelle Aquitaine). Together, their mission includes the preservation and management of the site as well as ensuring a positive welcome for visitors. Operation of the site is guided by an advisory committee (which includes the Coastal Conservation Authority) and a scientific committee comprising archaeologists, geologists and environmental education groups.

FIGURE 6.3　Tourists climbing the Dune du Pilat

Photo: Shutterstock

An idea of the effect of erosion can be gained from the experiences of the 15 UK national parks, which receive over 100 million visitors annually. The pressure on the land can be immense. Table 6.3 records the number of visitor days per square kilometre. Remember, however, that those using a park do not spread evenly over its area but are

often attracted to key locations, termed **honeypots**, as visitors swarm in large numbers to these places. As a result, in some areas footpaths are overused, leading to soil becoming compacted and grass and plants dying. Under some circumstances, the soil becomes loosened and is then lost through wind erosion. A report by the Lake District National Park Authority (n.d.) revealed that a path from Coledale Hause towards Wandope had suffered such extensive erosion that it had formed a gully almost two metres deep.

TABLE 6.3   Visitors to national parks in the UK

National Park	Visitor days per km²
Brecon Beacons	3720
Broads	51,155
Cairngorms	685
Dartmoor	3253
Exmoor	2882
Lake District	10,161
Loch Lomond and the Trossachs	3753
New Forest	23,684
Northumberland	1622
North York Moors	7531
Peak District	8177
Pembrokeshire Coast	20,934
Snowdonia	4779
South Downs	24,015
Yorkshire Dales	5782

Note: Visitor days takes into account that visitors may stay in a national park for several days and therefore one person coming for a day = one visitor day; one person coming for a week = seven visitor days.

Source: National Parks UK, 2014

This followed similar efforts, made in the early 1990s, to counteract the erosion of footpaths. Across the moors near Haworth, some 25,000 visitors had turned parts of the Brontë Way into a quagmire, making it necessary to set flagstones into the track. Other running repairs have had to be made to long-distance footpaths such as those on the Pennine Way and Cleveland Way. Such artificial landscaping, of course, creates a very different visual landscape from the wild moorland it replaces, but it is a solution that is being used more widely as such footpaths have to deal with greater numbers of visitors each year.

Climbers, too, also damage the parks. With the increased interest in activity holidays, climbing is becoming a very popular pastime. Some 250,000 people climb Mam Tor in Derbyshire every year, for example, and this has so affected the mountain that the summit had to be restored with an importation of 300 tons of rock and soil.

To protect fragile environments, there are often restrictions and regulations introduced. Conflicts between different users, such as walkers, mountain bikers, horse riders and

off-road vehicles, can occur and regulations may be needed to ensure that the needs of different groups are met. The impacts from these groups can also differ, thus a variety of protective activities may be needed. There is, however, an inevitable trade-off between protection and economic wellbeing.

Erosion of constructed sites by tourists

Although constructed sites are generally less fragile than natural ones, these too can be affected by erosion in the long term – externally by weather, internally by wear and tear from multiple visitors. Sites exposed to the elements may have to restrict access, especially if they become so dilapidated that they pose a danger to visitors, as is the case with some historic castles.

The Acropolis in Athens has had to be partially closed to tourists to avoid wear and tear on the floors of the ancient buildings, while the wooden floors and staircases of popular attractions such as Shakespeare's birthplace in Stratford-upon-Avon also suffer from the countless footsteps to which they are subjected each year. Stratford, with a population of only 26,000, receives 4.9 million visitors every year, a substantial proportion of whom will want to visit Shakespeare's birthplace. The high numbers led major attractions to construct artificial walkways above the level of the floor to preserve the original flooring. Nearly a million people visit Bath's Pump Rooms and the Roman Baths complex each year and inevitably there are fears for the original stone flooring of the Baths. It may put the problem into context when it is revealed that Roman visitors, wearing hob-nailed boots, did even more damage to the original flooring than do contemporary visitors, though they were far fewer in number.

THE DANGER OF TOURISM TO FLORA AND FAUNA

Wildlife can be an important attraction for some tourist destinations. The Great Barrier Reef in Australia is popular with snorkellers and scuba-divers keen to view the fish and the coral, while destinations across Africa attract safari tourists intent on viewing big game. However, tourism can cause many problems, harming the very wildlife the tourists have come to see.

First, we need to recognise that the construction of tourist infrastructure, such as hotels, bars, restaurants and visitor centres, can reduce the land available to the wildlife. Fencing around developments can influence traditional grazing or migration patterns and can draw key resources, such as water, away from rivers and watering holes. There are also issues with the management of waste products; for instance, some wild animals may become scavengers if food remnants are left in accessible places. Animals may also scavenge through rubbish and be harmed by trying to consume plastic packaging, camera batteries and other such detritus. The construction process itself needs to be carefully managed to ensure that the noise does not scare away the wildlife and that it does not harm nesting grounds.

Even where tourism infrastructure is not adjacent to the wildlife, many tourists will still journey to view amazing flora and fauna. As mentioned at the beginning of the chapter, transport can cause pollution, but we also need to recognise that frequent visits by tourists can impact on the breeding patterns of wildlife as well as their patterns for foraging for food and their natural defence responses to humans. Without careful management, these can lead to a decline in the population size. This has affected loggerhead turtles in Greece and Turkey, as well as in the Caribbean. They become distracted from laying their eggs by the bright lights of tourist resorts or the use of searchlights to observe their coming ashore to lay eggs on the beach.

At Philip Island, near Melbourne in Australia, 500,000 people a year come to sit and watch the evening 'penguin parade' of fairy penguins coming ashore to their nests. This event has become highly commercialised and the large crowds are proving hard to control, even though ropes are in place to prevent people getting too close to the penguins. Flash photography is forbidden and wardens caution the audiences against noise or even standing up, all of which disturb and alarm the penguins. In practice, however, the public frequently ignore these strictures.

Animal behaviour can change as a result of prolonged exposure to tourists. In some countries, food lures are used to attract wildlife to a particular locality. For example, in Samburu National Park, Kenya, goats are slaughtered and hung up for crocodiles or leopards. This modifies hunting behaviour and may encourage dependency on being fed by humans. In some wildlife parks, hyenas are known to watch for assemblies of four-wheel drive vehicles in order to take the prey from cheetahs' hunts. 'Bearjams' are created in Yellowstone National Park, USA, as bears trade photo opportunities for offerings of food. The dolphins at Monkey Mia in Australia have long been a popular tourist attraction, with coach tours scheduling their arrival with feeding times (see Figure 6.4).

FIGURE 6.4   Feeding the dolphins in Monkey Mia, Australia

Photo: Claire Humphreys

Tourists who choose to engage with nature by visiting wilderness areas, camping in forests and hiking across mountains will still have an impact on the environment. Campfires can draw on local wood and leave scorch marks on the landscape. While each individual fire may seem to have only a small effect, when large numbers of tourists visit, the overall impact can be unsustainable. Furthermore, uneducated tourists may inadvertently cause wildfires, leading to vast tracts of land, some wildlife and occasionally homes being lost.

EXAMPLE

Protecting Annapurna from the trekkers

Nepal has been renowned for its trekking opportunities for decades and many backpackers head to the Everest region. Yet it is estimated that about 60% of trekkers head to the western area of the country to walk in the Annapurna region – more than 158,000 tourists visited in 2017.

The region now faces many environmental problems exacerbated by this inundation of people. The Annapurna Conservation Area Project (ACAP) was established in 1986 with the goal of encouraging more sustainable tourism. To fund conservation efforts, a fee is charged to enter the area, and checkpoints throughout the trekking area monitor this by ensuring that walkers hold the required permits.

One of its key projects was to minimise the use of firewood, in order to reduce forest depletion. The soaring number of visitors, whose fuel wood consumption is twice that of the local people, has exerted immense pressure on forest resources. Local businesses such as lodges were encouraged to convert to kerosene or fuel-efficient wood stoves, while tourists were informed about the variety of ways that they could reduce their impact; suggestions have included avoiding showers if wood is to be burnt for hot water, not choosing foods that require lengthy cooking times, and eating at times when many others are ordering food so that batch cooking is possible. Since its inception, ACAP has supplied more than 1500 improved cooking stoves and 200 pressure cookers, thus reducing fuel wood consumption by more than 30%.

Another major issue the area faces is waste management. It has been estimated that a group of trekkers creates approximately 1 kg per person of non-biodegradable/non-burnable waste during the course of a ten-day trek. The ideal solution is to require that this rubbish is ported out of the region, but all too often this is left at mountain lodges, and builds up on the edge of villages as no waste-removal system exists. ACAP has funded the development of seven rubbish collection centres, over 200 incinerators and 800 rubbish bins, all of which have helped improve sanitation.

Despite the environmental pressure caused by tourism, in recent years a number of alternative trekking routes have been established and promoted so that 'more trekkers are able to experience greater variety, this while continuing to extend tourism opportunities for other remote communities' (NTNC, 2017: 12). One-metre-wide trails have been constructed to ensure safety and ease of access to these new routes.

Even souvenir hunting can affect the ecological balance of a region. The removal of plants has long given cause for concern (the Swiss were expressing anxiety about tourists' habit of picking gentians and other alpine flowers even before the start of the mass tourism movement) and, in Arizona, visitors taking home cacti are affecting the ecology of the desert. Similarly, the removal, either as souvenirs or for commercial sale by tourist enterprises, of coral and rare shells from regions in the Pacific is also a cause for concern.

The desire to bring back souvenirs of animals seen abroad poses another form of threat to endangered species. The Convention on International Trade in Endangered Species (CITES) imposes worldwide restrictions on the importation of certain animals and animal products from countries visited by tourists. Around 5000 endangered animal and 30,000 plant species have been identified, and the importation of many of these or their byproducts is banned, including ivory, sea turtle products, spotted and striped cat furs, coral, reptile skins and seashells, as well as certain rare plants. Concern is also expressed about the ill-treatment of animals that are kept in captivity for the amusement of tourists. While performing bears have largely been removed from the streets of some Eastern European countries following EU pressure, they are still a common sight in China. Even within the EU, one can still find chimpanzees and monkeys exploited for tourist photographs in countries such as Spain, and, of course, bullfighting remains not only legal but also a popular tourist attraction in that country and the South of France. A number of action groups in the UK have been set up to protect and free these animals.

OTHER ENVIRONMENTAL CONSEQUENCES OF MASS TOURISM

Many popular tourist towns have narrow roads, leading not only to problems of severe traffic congestion but also to potential damage to buildings, as tourist coaches try to navigate through these streets. Increasingly, cars and particularly coaches are restricted in terms of access to the centres of such towns, with park and ride schemes or other strategies employed to reduce traffic. Impeding coaches from picking up and setting down passengers in the centre of towns such as Bath, Cambridge or Oxford, however, can make it very difficult for coach companies to operate as many are on short stopover visits as part of a day trip.

Many developing countries face similar problems of congestion and erosion as the popularity of long-haul travel expands. Goa in India was hailed by many operators as an 'unspoilt paradise', but its wide appeal since the 1990s has caused environmental lobbyists such as Tourism Concern to draw attention to the dangers the region faces. Water shortages in the area are aggravated by tourists' consumption (one 5-star hotel uses as much water as five villages and locals face water shortages while swimming pools are filled) and sand dunes have been flattened. Apart from the environmental impacts, there are also social costs. The private beaches mean access by the locals is denied, and 'Westernisation' of the local carnival dilutes the traditional identity and culture of the region. The problems of Goa have been well publicised in recent years, but this has had little effect on reducing the number of visitors or ensuring that tourism in the area is sustainable.

Sometimes, well-meaning attempts by tourist officials to 'improve' an attraction can have the opposite effect. Historic rock carvings over 3000 years old in Scandinavia were painted to make them stand out for visitors. When the paint eventually flakes off, a process that has speeded up with the effect of acid rain, it takes part of the rock surface with it.

Any development of tourism will inevitably require the sacrifice of some natural landscape to make way for tourist facilities. An extreme example of this is to be found in the demand for golf courses. It has been estimated that there are some 30,000 golf courses in the world. In recent years, new courses have been built in areas where water shortages would normally discourage their construction, such as in Dubai, Tunisia and the Egyptian desert, but the popularity of golf tourism drives their development. Golf as a holiday activity, especially among Japanese tourists, has led to a huge increase in demand for courses in the Pacific region. For example, the island of Oahu in Hawaii, which had already constructed 27 courses by 1985, received a further 30 applications after the Hawaii legislature agreed to allow them to be built on agricultural land. Apart from water use issues, the loss of natural scenery and wildlife habitats also needs to be considered.

EXAMPLE

Sustaining golf in the desert

Las Vegas is renowned as a casino destination. Visitors also head to the desert city for weddings, as a base for their visits to the Grand Canyon and to play golf; but the many golf courses require copious amounts of water, a precious resource.

Southern Nevada Water Authority (SNWA) introduced both incentives and penalties to encourage reduced water usage. Golf courses were set a water budget with punative fines for exceeding this level of use. At the same time, courses were encouraged to remove turf (primarily in areas out of play and on driving ranges) and allow the land to return to desert scrub. As an incentive, $1 per square foot was paid in this 'cash for grass' scheme. The cash received helped cover the cost of remodelling the landscape and ultimately reduced the annual water bill for each course. Estimates suggest that 836 acres of turf have been removed from golf courses, with savings in water usage of 2.7 billion gallons.

Sources: Bennett, 2012; Kanigher, 2014

THE ENVIRONMENTAL IMPACTS OF WINTER SPORTS TOURISM

One fragile ecosystem in Europe is under particular threat: the Alps. Because the system is spread across no fewer than seven countries, collaboration to prevent the worst of the environmental effects of tourism is made more difficult. The Alps receive over 120 million visitors a year and some 7 million passenger vehicles cross them each year. To accommodate the huge increase in winter sports tourism that has occurred since World War II, some 3400 km² of ski areas have been constructed. The proliferation of ski-lifts, chalets and concrete villages above 6000 feet and the substantial deforestation required to make way for pistes have led to soil erosion, while the high volumes of traffic crossing the Alps contribute to air pollution. The increased use of snow cannons (providing artificial snow created using water and chemical and biological additives) to augment low levels of natural snowfall further exacerbates the environmental impact (WWF, 2018). Furthermore, a new danger is posed by the introduction of roller skiing on grass and four-wheel-drive car racing in summer.

Lillehammer in Norway, site of the 1994 Winter Olympic Games, took account of the problems already occurring in the Alps when designing its new facilities. Apart from efforts to minimise tree clearance, the authorities also took steps to avoid visual pollution in an area where comparatively few buildings exist. Ski jump runs were moulded into the mountainside to ensure that they did not project above the tree line and similar efforts were made to conceal bobsleigh and luge runs in the forests. The speed-skating stadium was built 20 yards away from the water's edge to protect waterfowl, and leak-proof cooling systems were embedded underground in concrete containers. Private cars were excluded from the town during the period of the Olympic Games. The International Olympic Committee has since produced a 'manual on sport and the environment', designed to offer practical guidance on the sustainable development of sporting facilities.

It is not only sports activities that threaten snowscapes. Glaciers, the ecosystems of which are invariably fragile, attract large numbers of sightseers when located in accessible regions. At the Columbia Icefield in Banff National Park, Canada, giant snowmobiles are employed to bring tourists onto the glacier. The inevitable consequence will be damage to the surface of the site, unless strict control is exercised over the number of trips organised.

POSITIVE ENVIRONMENTAL IMPACTS OF TOURISM

While there has been much discussion throughout this chapter of the negative effects of tourism on the environment, tourism can also play a role in protecting the environment. Conservation and regeneration of historic buildings have been achieved in cases where they have successfully become tourist attractions, with financial support coming from entry fees and donations. Beck and Bryan (1971: xxi) reported that 'many historic houses, villages, old churches and so on could not be kept in a proper state of repair without tourist money'. Entry fees can also help fund museums, galleries and other cultural and heritage resources, providing protection for future generations. There are also many cases where historic buildings have been converted for use as tourist facilities, such as hotels, restaurants and tourist attractions like craft centres and working museums.

Conservation of the natural environment can also be encouraged through tourism. Big game in Africa has been protected though a range of initiatives, such as safaris, which provide the local population with an income, through tourism. There has also been extensive debate regarding hunting tourism as a means of wildlife protection, the justification being that wealthy foreigners will pay significant sums to licensed operators to be allowed to stalk and shoot prey. Advocates argue that, properly managed, it can keep rising animal populations in check, while the high fees providing livelihoods for these tourist businesses generate funding for conservation and breeding programmes and can even benefit the hunted creature by providing a reason to conserve it (Rowe, 2009).

EXAMPLE

Trophy hunting and tourism

Hunting tourism is becoming an increasingly interesting sector for many tourism regions. In October 2012, the Canadian Tourism Commission published a positive assessment of the potential opportunities of developing sport fishing and game hunting in Canada. Similarly, Belarus announced strong demand from this sector, estimating that US$15 million is earned through hunting tourism, predominantly from the Russian, Ukrainian, German, Austrian and French markets.

Views on trophy hunting are polarised, with those seeking to protect animals on one side and hunters (and pragmatic conservationists) on the other (Lindsey et al., 2007), who claim that fees paid by tourists pay for conservation and habitat-protection activities.

Big game hunting is permitted in many African countries with South Africa having the largest share of the trophy-hunting market, bringing in £100 million to the economy. With tourists prepared to pay US$125,000 for a lion trophy and $390,000 for a black rhino, the value of big game is significant. But numbers are limited by the Convention on International Trade in Endangered Species (CITES), which establishes quotas for trophy hunting. The current agreement allows five black rhinos to be killed as trophies annually in South Africa.

However, several African countries – including Botswana, Zambia and Kenya – have banned the practice, primarily over concerns that corruption and poaching are threatening species survival.

Conservation of landscapes has been discussed throughout this chapter, with the funding provided by tourist spending an important element in the continued maintenance of these regions. Importantly, tourism programmes designed to protect the environment can also provide education and awareness of sustainability among the local population.

PUBLIC-SECTOR PLANNING FOR CONTROL AND CONSERVATION

We have now seen many examples of the environmental impact of tourism and a few illustrations of how the problems might be managed. Some argue that it is not enough for individual authorities to tackle the situation – it should be tackled on a global scale. Unfortunately, few governments so far have appeared willing to do so at this level. International designation of an attraction as a World Heritage Site by UNESCO undoubtedly helps, and collaborations between groups with vested interests in the sustainable use of natural resources, as we have seen earlier in this chapter with the example of the Dunes de Pilat, are becoming more common.

In Chapter 5, we looked at some of the moves that have been made since the early 1980s across the globe to embrace tourism sustainability. For the most part, the conferences and resulting papers have focused on making recommendations, leaving the question of mandatory control in the hands of national governments. Nonetheless, 150 countries signed up to the Agenda 21 proposals arising from the Rio Summit in 1992 and the EU has taken an active role in recent years in attempting to control the worst effects of environmental pollution, the Blue Flag scheme being typical of this. Costa Rica can be cited as an outstanding example of a sustainability-aware developing country with a rapidly growing tourism market, issuing Certificates for Sustainable Tourism to tourist companies organising holidays in the country.

The announcement by President Donald Trump in 2017 that the USA would withdraw from the Paris Agreement (an international convention to reduce greenhouse gas emissions) sparked extensive discussion on government efforts internationally to mitigate against environmental pollution. President Trump has also reduced the area of protected public lands by scaling down two national monument areas, leasing public land for mining and impacting other existing conservation activities by reducing National Parks Service budgets.

The creation of national parks to preserve sites of scenic beauty is by no means of recent origin. As early as 1872, the USA established its first national park at Yellowstone, while Europe's Abisco National Park in Sweden dates from 1909. The intention behind the creation of these parks was to ensure that visitors did not destroy the landscapes that they had come to see. Sustainability may be a word of recent origin in tourism, but the concept is much older. The International Union for Conservation of Nature (IUCN) now recognises more than 68,000 protected areas worldwide, covering an area of 5.7 million square miles, nearly 10% of the globe. As sustainability becomes a more important issue each year and, despite the changes occurring in the USA, the volume of protected land swells.

EXAMPLE

Gabon

After an approach by American ecologist and explorer Mike Fay to the Gabon president in 2002, that country's authorities announced at the Rio conference the planned creation of 13 new national parks, with the aim of becoming Africa's leading destination for eco-travel.

The parks extend to over 11,000 square miles, around 11% of the country's land mass. The country has outstanding potential for ecotourism as it hosts marine, island, coral-reef, coastal, lagoon, swamp and rainforest environments (Laurance et al., 2006). Support for these parks has come from organisations such as the Wildlife Conservation Society (WCS), World

Wide Fund for Nature (WWF), Conservation International (CI), ECOFAC and the Smithsonian Institution.

One difficulty in establishing these parks is related to the relocation of the indigenous population. Resettling thousands of people onto new, equally fertile and prosperous, land is an expensive and slow process (Dowie, 2009). The balance between environmental protection and enhancing economic benefits and social wellbeing is always difficult to achieve. The parks have experienced extensive poaching, with 11,000 elephants killed since 2004, fuelled by the demand for ivory.

Of course, most countries and local authorities are generally well-intentioned, but they can also inadvertently become partners in despoliation when putting commercial advantage before aesthetic considerations. Spain, for example, experienced a sudden boom in tourism during the 1960s, but went on to allow massive overdevelopment along its east coast and in the Balearic and Canary Islands, which nearly destroyed its success.

Failure to maintain the quality of the environment in other directions can also lead to a massive loss of tourist business, as the popular Spanish resort of Salou found, following a drinking water scare in 1989. The widespread fall-off in Western European visitors to Spain in the 1980s and 1990s (mitigated to some extent by a rise in Eastern European and Russian visitors), however, caused a reversal of policy and much greater control being exercised over speculative tourism development. A good example of this can be found in the Balearics.

Parliament passed legislation in 1991 to nominate large tracts of land in Majorca, Ibiza and Formentera as zones restricted from further development. In Majorca, only 4- and 5-star hotels were permitted to be constructed, with a minimum of 120 square metres of land per bed, in an effort to drive tourism upmarket. In order for planning permission to be granted for the construction of new hotels, developers have been required to purchase and knock down an existing and deteriorating hotel of inferior status. Badly run-down resorts such as Magaluf were given an injection of capital to widen pavements, introduce traffic-free zones, plant trees and shrubs and install new litter bins and graffiti-free seating. In all, Spain spent over £300 million over a five-year period (ending in the early 1990s) on improving facilities for tourists along its coasts.

In 2003, the Balearics took a further step in sustainability, by introducing an eco-tax that was designed to fund sustainable improvements to tourism in the islands. Unfortunately, insufficient thought went into its implementation. Hotels were expected to collect this from guests themselves, but the resultant discontent led to the tax being scrapped by the new local government, which was elected a year later.

Interestingly, the financial pressures experienced at the end of the 'noughties' led many local governments to revisit the issue of tourist taxation (discussed in Chapter 4), ostensibly to provide funds to manage pressure caused by tourists.

Other countries notable for their failure to provide adequate controls as their tourism industry boomed (and failure to learn the lessons from Spain's experience) include both Greece and Turkey. Among developing countries, Goa in India and the Dominican Republic in the Caribbean were both unprepared for the scale of the mass tourism generated by tour operators in the 1990s and failed to control their development adequately.

Spain's experience is a cautionary one, and the degree to which it has been successful in turning around its fortunes is notable. In general, however, the evidence suggests that, once a resort has gone downmarket, it can be very hard to bring back higher-quality tourists. Simply constructing new, high-price hotels will not lead to success in attracting a new market.

EXAMPLE

Governmental control on visitor numbers

Some countries have taken the view that, where tourism does not already have a strong hold, it is best to control entry to reduce the risk of environmental and cultural despoliation occurring.

The Government of Bhutan only began to open its borders to tourism in the 1970s, but to ensure it protected its traditions and environment, a policy limited the number of foreign visitors to just 15,000 per year. It introduced a high fee to reduce demand (at the time of writing, this is $250 per day, with a $50 per day reduction in the off season), but provided food, internal transport and lodging within this amount. It also includes $65 which goes to fund education, healthcare and poverty alleviation initiatives for the local population. In 2010, with visitor numbers at 30,000 annually, Prime Minister Jigme Thinley announced plans to expand entry permits to allow 100,000 tourists by 2012, an almost threefold increase. This opened the door for further expansion and arrival figures for 2017 revealed that more than 254,000 tourists travelled to Bhutan, with India being the biggest source market (UNWTO, 2018).

At the local level, some form of public control is also essential to ensure that each new building is well designed and all existing buildings of quality are carefully preserved and restored. Heritage is also a sustainability issue, one that goes beyond the interests of tourism alone. It underpins the very fabric of a society and, in nations with a wealth of heritage buildings, each building lost through failure to protect it or enforce its restoration becomes an irreparable loss to the culture of those nations. Europe owes much of its tourism demand to the attractiveness of its traditional heritage and landscape, and destinations, whether rural, urban or seaside, that fail to concern themselves with the sustainability of their attractions cannot expect to retain their tourists.

EXAMPLE

Environmental protection in the UK

In the UK, sensitivity to the impact of tourism on the environment dates back at least as far as the nineteenth century. Concern over possible despoliation of the Lake District, then growing in popularity, led to the formation of a Defence Society in 1883 to protect the region from commercial exploitation. The National Trust was created in 1894 to safeguard places of 'historic interest and natural beauty' and promptly bought four and a half acres of coastal clifftop in Cardigan Bay.

The National Parks and Access to the Countryside Act 1949 led to the formation of ten national parks in England and Wales, each administered by a National Park Authority. The Norfolk Broads achieved the equivalent national park status under the Norfolk and Suffolk Broads Act of 1988. The New Forest on the Hampshire/Dorset borders was raised to national park status in 2004 and the South Downs area followed recently, the latter being formed from two existing Areas of Outstanding Natural Beauty. Scotland created its first two designated national parks – first Loch Lomond and the Trossachs, then the Cairngorms – in 2002 and 2003, respectively.

The National Parks Act also led to the designation of 46 areas as Areas of Outstanding Natural Beauty (38 in England and Wales and eight in Northern Ireland) that merited protection

against exploitation. The first of these, the Quantock Hills in Somerset, was so designated in 1957, while the last – the Tamar Valley in England's West Country – was designated as such in 1995. Since then, there have been numerous moves to protect features of historical or architectural interest or areas of scenic beauty from overdevelopment, whether from tourism or other commercial interests. Notable among these are 143 designated national nature reserves and more than 4000 Sites of Special Scientific Interest (SSSI), which contain rare flora or fauna. An EU Wildlife and Habitats Directive gives stronger protection to some of the most notable SSSIs, which were decreed special areas of conservation in 2000. The UK government recognises the threat to these sensitive areas caused by growth in tourism and leisure generally and is attempting to control it, although the countryside remains under threat from the need for more land for the construction of roads, private housing, expansion of airports and similar developments.

THE PUBLIC-/PRIVATE-SECTOR INTERFACE IN THE DEVELOPMENT OF SUSTAINABLE TOURISM

Planning controls, whether executed centrally or regionally, are essential if the inevitable conflicts of interest that arise between the public and private sectors are to be avoided. Private enterprise, unrestricted, will seek to maximise profits, often in the short term, and this can more easily be achieved by concentrating marketing efforts on popular attractions and destinations, rather than investing in the development of new ones. Airlines will clearly find it more profitable to focus on the routes already generating the most traffic, while hotels in a boom resort will build large and relatively cheap properties if this produces the highest margins.

Tour operators and, to a lesser extent, travel agents exercise massive marketing power over destinations through their influence on the decisions of consumers about where to go and what to do. Operators can make or break a destination through their decision to enter or withdraw from it. Sustainability means ensuring cooperation between carriers, hotel companies and operators so that any development is not for short-term gain but in the long-term interests of the locals.

This is by no means a condemnation of the industry as a whole. For every large company that seeks to exploit its market position, there are others that recognise their responsibility to their destinations, as well as numerous small companies, both airlines and operators, actively seeking market gaps – untapped markets and destinations where the opportunity to develop tourism would be welcomed by locals or a focus on superior facilities would be appropriate.

By contrast with the failures in development planning cited earlier, the planning of the Orlando Walt Disney World Resort site reveals a better approach to the protection of a fragile environment. The site chosen, in central Florida, was largely scrubland and a deprived area in need of economic support. Walt Disney Productions took due account of the potentially enormous impact that the theme park would have on the state, including new road networks and airport construction in its plans. Protected sites well away from the park itself and the emerging town were clearly designated and, arguably, the site itself stands as a model of good development. By contrast, the impact that development further south has had on the Everglades National Park, where the wetlands have been significantly affected by engineering to provide water for coastal expansion, including meeting the needs of tourists, has been far less positive.

EXAMPLE

Tourism development in Dubai

The coastline of the United Arab Emirates (UAE) in the Middle East can be cited as evidence of development planning for tourism. Dubai in particular has implemented plans to develop tourism as a strategy to reduce its dependency on oil. The 1980s saw efforts to expand tourism as a catalyst for attracting foreign investment, this focusing on business tourism, leading to a growth in tourist arrivals from 422,000 in 1985 to 1.6 million a decade later.

This success led to the creation of the Department of Tourism and Commerce Marketing (DTCM) as the 'principal authority for the planning, supervision and development of the tourism sector in the emirate' (DTCM, 2011). Alongside its marketing activities, the DTCM works to maintain quality through its licensing role of the accommodation and travel trade sectors as well as through providing skills training to staff of local tourism enterprises. The DTCM also established sustainable tourism initiatives through a 'green tourism award', which encourages the tourism industry to consider the conservation of natural resources and the efficient use of energy and water.

Policies to remove or reduce restrictions on traditional dress, alcohol consumption and visa requirements all helped to expand visitor appeal further, and by 2005 international arrivals were reported to have exceeded the 6 million mark.

Development of the '7-star' Burj-Al Arab hotel and the construction of artificial islands offshore have provided iconic landmarks to create a reputation as an innovative tourism destination (Sharpley, 2008). Importantly, tourism was cited in the Strategic Development Plan 2015 as a key sector to ensure future economic development.

The low-cost airlines have been widely criticised for the air pollution they generate, but, on the plus side, by exploiting opportunities at small regional airports and working in cooperation with specialist tour operators, they have brought prosperity to many regions that previously had only limited access to tourists. Clermont-Ferrand in France, Graz in Austria and Trieste in Italy all have reason to be grateful for their services in making these cities and regions more accessible to tourists. The budget airlines have also been responsible for generating substantial local employment for air crew and ground staff when concentrated at airports such as Stansted and Luton. Of course, the influx of travellers at these regional airports has often pressured local infrastructure, creating additional demands on the natural environment.

The travel industry is continuing to take sustainability more seriously, with greater cooperation evidenced between the public and private sectors. Other notable examples include the Australian Nature and Ecotourism Accreditation Programme (NEAP) and Cooperative Research Centre (CRC) for Sustainable Tourism, South Africa's Fair Trade in Tourism (FTTSA) and the Global Sustainable Tourism Council, supported by the United Nations Environment Programme, the UNWTO and other organisations such as the Rainforest Alliance to oversee sustainable tourism certification.

The World Travel and Tourism Council (WTTC) has worked with the industry since 1994 to develop the Green Globe awards for sustainability (albeit initially with limited success) and promote guidelines for travellers, disseminated in the form of leaflets. The WTTC has also taken on responsibility for the Tourism for Tomorrow awards, initiated by BA, which gain widespread publicity for sustainable tourism enterprises. Finally, in the UK, the formation of the Travel Foundation, referred to in the previous chapter, signals cooperation between the public and private sectors, including some of the largest companies

in the industry, reflecting for the first time a real commitment by the industry to the idea of sustainability.

American-owned companies operating globally have been notable for their commitment to sustainability. Walt Disney Enterprises, to take one example, recycles the oils, paints and cleaning materials used on its sites. The Intercontinental Hotels chain undertook a worldwide environmental audit at the beginning of the 1990s, which led to a policy of recycling waste and introducing cruelty-free (not tested on animals) toiletries in guests' rooms.

The accommodation sector has led the way in introducing sustainable approaches, though initially through their desire to save on costs. The now well-established policy of reducing laundry bills by limiting the frequency of washing towels has extended to other cost-saving tactics that offer sustainable benefits. For example, some hotels in Hawaii have installed flow regulators on showers and taps to control water wastage.

The concept of the environmental audit is gaining acceptance among tourism companies, BA being one notable example of a firm having adopted it. While the publication of environmental reports, as an element of the annual report, has become a widespread policy among other industries in recent years, the travel industry is only gradually coming to terms with this innovation.

TECHNOLOGY AND SUSTAINABLE TOURISM

As we highlighted at the beginning of this chapter, technological innovation is improving efficiency in the transport sector for tourism. For example, when taking delivery of the new A380 planes, Emirates Airlines launched a range of initiatives to improve efficiency throughout its operations, including using **on-board navigational technology** that saves time, fuel and emissions.

Another technological advance has been the use of **cloud technology** to increase the efficiency of global operations. In 2013, TUI Group announced its decision to use CloudApps' Sustainability Cloud software to track and analyse sustainability performance across its brands. The online software consolidates environmental data from different parts of the business, enabling TUI to meet its carbon reporting requirements. The system also enables detailed assessment of the sustainability performance of individual hotels, encouraging each premises to monitor and improve its own activities.

While each initiative might seem only a small step forward, when considering the scale of international travel, the use of smartphones and travel apps have the potential to reduce the impact each traveller has on the environment. For a start, no longer needing to print boarding passes – which instead are stored electronically on phones – can reduce the amount of printed paper required. In the same way, hotels are offering electronic records of bookings, with apps storing these centrally in date order, alerting the user as the date nears. Smartphones can also provide access to electronic maps and guidebooks, again reducing the reliance on paper.

As ever, technological innovation is moving at a pace, but we can say with some confidence that technology has the potential to reduce the environmental impact of tourism for businesses and travellers alike.

SUMMARY

The many different negative impacts of tourism are now well reported, leading to awareness of both tourists and businesses. Efforts to reduce the damage caused by tourism have led to many environmental programmes being introduced, although these are often on a local scale. Importantly, some positive impacts of tourism on the environment do exist, and this has helped to ensure that buildings and landscapes are protected and maintained.

There is still scepticism among many commentators as to the extent to which sustainable activities can be viewed as a genuine response to the threat to our environment rather than a public relations exercise designed to win public favour. Many businesses chose to cut back on their sustainable investment when faced with difficult trading conditions in the post-2001 era, and there is little doubt that a number will continue to pay no more than lip service to the concept unless it can be shown to be in their financial interest to do so, based on demand from their customers. While some tourists are believed to actively consider sustainability issues when considering their travel plans, there is still doubt about the majority of the travelling public's willingness to pay more for their holidays if they are designed to be more sustainable.

Nonetheless, what will have started out for many companies as no more than a marketing ploy may later turn into a genuine commitment to improve the environment as lobbying by environmental interests takes effect and public awareness of the issues spreads.

QUESTIONS AND DISCUSSION TOPICS

1. To what extent can national governments reduce the negative impacts of tourism?

2. This chapter reveals that the country of Bhutan controls visitor numbers through a policy that requires a high minimum daily spend on entry. To what extent would a 'high-pricing' approach be possible and/or desirable for tourist attractions already receiving excessive levels of visitation?

3. How can an understanding of carrying capacity assist managers of popular tourist destinations?

TASKS

1. In small groups, produce a video that identifies examples of both negative and positive environmental impacts caused by tourism.

2. Select either a hotel chain or an airline business. Investigate the company's policy on environmental sustainability. Summarise this in a poster and offer suggestions for other actions that could be undertaken by the business.

FURTHER READING

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Blue Flag: www.blueflag.org

European Environment Agency: www.eea.europa.eu/themes/tourism

Green Globe 21: www.greenglobe.com

International Union for Conservation of Nature: www.iucn.org

Rainforest Alliance: www.rainforest-alliance.org

Responsible Tourism Partnership: www.responsibletourismpartnership.org

Tourism Concern: www.tourismconcern.org.uk

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