

Chapter 6: Environmental Impacts of Tourism and Hospitality Operations

VITALIS BASERA, RUDORWASHE BAIPAI AND MIRIAM MBASERA

Abstract

Tourism and hospitality industry operations pose several striking environmental impacts, depending on the type of operations. The operations consume resources such as water, energy and wildlife on a day-to-day basis, creating an unwarranted pact of waste and reduction of resources. Hotels, lodges, restaurants, safari game parks and transport are illustrations of the industry units that make more information available on the environmental impacts of tourism and hospitality operations. This chapter discourses the foremost environmental impacts caused by tourism and hospitality operations and pinpoints the different types of impacts. Development of tourism impacts on the environment is broadly explained at global level, cascading down to the local level and their subsequent effect to tourism activities. Examples and case studies are highlighted to clearly show the environmental impacts of tourism and hospitality operations in context.

CHAPTER OBJECTIVES

1. To describe the main types of environmental impacts of tourism and hospitality operations;
2. To understand effects of environmental impacts of tourism and hospitality operations;
3. To describe global environmental impacts of tourism development and the subsequent effect to tourism activities; and
4. To discuss the implications that these issues have for the good management of the tourism and hospitality industry.

INTRODUCTION

This chapter articulates the impact of tourism and hospitality operations on the environment. The environment is made up of both the natural and man-made features. Countryside zones may comprise a large number of tourist attractions and the towns may contain many hospitality facilities. In argument and description, the tourism and hospitality operations cannot be totally separated, hence their impacts can be one and the same. The term “environment” is often assumed to mean natural features only. The natural

environment is commonly referred to as physical environment that includes the landscape, mountains, beaches, animals and vegetation. Figure 1 illustrates five facets of the environment that consist of the natural environment, wildlife, the farmed environment, the built environment and natural resources.

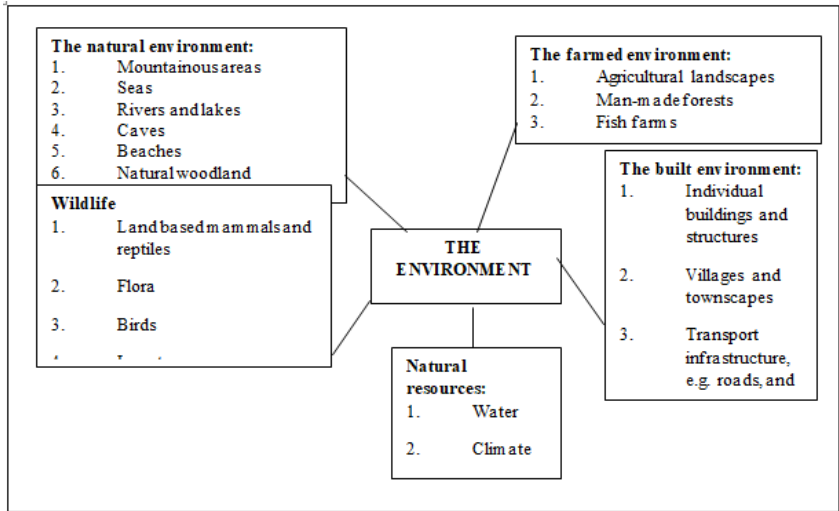


Figure1: *The scope of the concept of environment* (Swarbrooke, 1999)

This chapter helps the reader to know and understand the environmental impacts of tourism and hospitality operations. At the end of the chapter, the reader will be able to answer questions in relation to: Where, When, What and How significant is tourism and hospitality operations impacts the environment? Generally, Milanés-Montero *et al.* (2014), in their international analysis of environmental impact, noted that some environments are more susceptible to impacts than others, depending on type, time and place of tourism and hospitality operations. An urban environment is affected differently from rural environment.

BACKGROUND

There is need for mankind to take care of the environment, to maintain and enhance the ability of the earth to sustain future generations. Some impacts to the environment are very obvious in our day-to-day lives, such as increasing traffic levels, together with the associated air pollution and loss of the green

belt. An environmental impact is defined as any change to the environment, whether adverse or beneficial, resulting from a facility's activities, products, or services (Hanania *et al.*, 2021). In other words, it is the effect that people's actions have on the environment. In industrial development, Oláh *et al.* (2020) expressed environmental impact adverse effect caused by a development, industrial, or infrastructural project or by the release of a substance in the environment. This also raises the need for sustainability development, a development that meets present needs without endangering the ability of future generations to meet their own needs (Sharma and Sharma, 2019).

An environmental impact can be a negative or positive aspect of human activity on the biophysical environment. Considerably, Boz *et al.* (2020,) in a review of consumers consideration for sustainable packaging, noted that consumers prefer environmentally responsible businesses and this has extended to travelling where consumers are considering environmental matters when making travel plans and purchases. A reflection of this is seen in the growth of ecotourism, which has grown by 30% worldwide in recent years compared to 8% for traditional tourism (Wondirad, 2020). Environmental impact ascends sustainability development in the hospitality industry.

Several industries, including and not limited to, mining, manufacturing, tourism and agriculture are affected by environmental impacts. At first the concern was linked only to the industries that produced direct pollution to the environment. But now it has turned out to be a broader issue and narrates not only to the outputs but also to the entire operations of industries. The tourism and hospitality industry also turns out to be a core industry to be discussed in this issue of environmental impacts, as it exposes many of the conflicts that arise in implementing environmental policies. Several hotels and restaurants are located in areas of outstanding natural beauty, in historic cities and in regions with a delicate ecological balance (Rampha and Nicolaides, 2014). So, there might be a question whether this addition of new facilities will destroy the uniqueness or its habitat that is already suffering from tourism overdevelopment. But the hospitality industry is linked with various other industries that cooperate to bring in a successful business that is focused mainly on profit (KPMG Canada, 2003). The hospitality industry is also a major customer-oriented industry. Customers, many of whom seek the hospitality experience to be spoiled with smashing of hot water, high pressure showers, freshly laundered linen, an ample supply of towels, copious supplies of food and drink, the availability of swimming pools and saunas and the limousine to take them to the airport, must be considered. Whatever we do to reduce the environmental impact of hotels can only be either with the consent

of customers or taking the main consideration as customer satisfaction. Many hospitality organisations are situated in locations suitable for the customer or according to the customer needs and It is, therefore, not situated in a place where there will be minimal effects from traffic, cooking smells and the noise of the disco and other adverse outputs.

The main environmental impacts caused by the tourism industry are carbon monoxide emissions, chlorofluorocarbon (CFC) emissions, noise, smoke, smells, waste energy, wastewater, waste food, waste disposal, agricultural ecology, sale of souvenirs made from endangered species and wood and disturbances to ecology due to location of hotels in fragile environments (Sunlu, 2003). According to the annual report of the World Travel and Tourism Council (WTTC) (2018) environmental review,

there is a recognition that environmental issues will become much more prominent as a factor that influences consumers, regulators, pressure groups and destinations and that the tourism industry will need to show increasing concern for these issues.

The WTTC have developed a strategy, known as the “GREEN GLOBE”, to promote environmental management among hotel and travel environment. These vary from waste management to the development of eco-hotels and the classification of hotels on the basis of environmental impact.

The world is not infinite; the very resources we promote through tourism and compete for with other industries are in danger of degradation. As more regions develop their tourism industry, it produces significant impacts on natural resources, consumption patterns, pollution and social systems. For mitigation of environmental impacts of tourism, Nhuta (2015) echoed the need for sustainable or responsible planning and management is imperative for the industry to survive as a whole. For better understanding of environmental impacts of tourism and hospitality industry, there is need to appreciate some facts and figures on tourism and hospitality operations impacts at a global perspective as highlighted in mega trends shaping the future of tourism by the Organisation for Economic Cooperation and Development (OECD) (2018).

An estimated 1.3 billion people travelled internationally in 2018 and this is expected to reach 1.8 billion by 2030 (UNWTO, 2019). The global travel and tourism industry creates approximately 10% of the world's direct and indirect employment and 10% of total global Gross Domestic Product (GDP). European Wilderness Society in 2019 reported the tourism and hospitality industry environmental impact facts and figures as showing a massive impact on water resources, carbon dioxide emissions and extinction of wildlife

species. The average Canadian household used 326 litres of water per day, a village of 700 people in a developing country uses an average of 500 litres of water per month and a luxury hotel room guest uses 1 800 litres of water per person per night. The average person in the UK uses approximately 150 litres of water per day, three times that of a local village in Asia (Rossberg, 2020). According to Lenzen *et al.* (2018) tourism is responsible for about 5% of the global carbon dioxide emissions and in terms of radiative forcing, tourism contributes to 4.6% of global warming. The transport sector, including air, car and rail, generates the largest proportion, with 75% of all emissions. In terms of carbon emissions, air causes 54-75% while coach and rail 13%. Air travel is considered the main tourism contributor to global warming: It is responsible for 40% of the total carbon emissions caused by this sector.

The accommodation sector accounts for approximately 20% of emissions from tourism (Filimonau *et al.*, 2011). This involves heating, air-conditioning and the maintenance of bars, restaurants, pools and so on. Clearly, this varies according to the location and size of the accommodation and the type of establishments – hotels having greater energy consumption than pensions or camping sites. Activities such as museums, theme parks, events or shopping also contribute to certain amounts of emissions (approximately 3.5%) (Inkson and Minnaert, 2012).

The Western world, with 17% of the worlds' population, currently consumes 52% of total global energy and seawater is expected to rise 70cm in the next 10 years (Tourism Sustaining, 2020). In 2017, UNEP postulated that by 2050, climate change could have directly led to the extinction of 30% of species, the death of 90% of coral reefs and the loss of half the Amazon rainforest. Since 1970, a third of the natural world has been destroyed by human activity (Begum, 2019). The United Nations Department of Economics and Social Affairs prospects that half the world's population lives in urban areas and this figure is expected to increase (United Nations, 2018). In Latin America and the Caribbean, 76% of the population live in urban areas. In urban guide cars report by Chesterton (2019), he estimated that by 2036, there will be 2.8 billion vehicles on earth, almost double the number today. The UN Food and Agriculture Organisation (FAO) observed that for every one degree rise in temperature above 34°C, yields of rice, maize and wheat in tropical areas could drop by 10% (FAO, 2019). Every day 90 million tonnes of carbon pollution are dumped into our atmosphere (UNEP, 2017). Water as a critical resource in human life and it is the worst polluted resource on earth as only

3% of water is potable although the 70% of the earth's surface is water (National Geographic , 2020). According to the International Civil Aviation Organisation (ICAO), a new record 4.1 billion passengers were flown by the aviation industry on scheduled air services in 2017.

ENVIRONMENTAL IMPACTS OF THE TOURISM AND HOSPITALITY INDUSTRY

Ever since, the environment has been a significant attraction rather a pull for visitors. There is indication of conflict between tourism activities and the wish to conserve landscapes and habitats. Like other impacts, it is possible to divide the environmental impacts into positive and negative impacts. The position of the observer will affect their assessment of whether the impacts are grouped as positive or negative (Mason, 2003). Conventional positive and negative impacts of tourism and hospitality are given below.

POSITIVE IMPACTS

1. It sometimes educates the public about the local environment and the importance of protecting it, for example, the Great Barrier Reef.
2. The tourism and hospitality industries often create employment and business opportunities in an area, contributing to the local economy.
3. Hospitality and tourism buildings and venues are being designed and redesigned so that impacts on the environment are reduced and they merge with the local environment better.
4. Many enterprises are now employing sustainable practices to promote a green image that appeals to consumers, for example, using organic products, recycling, using fewer toxic chemicals and using more energy and water efficient fittings.
5. Tourism may provide revenue for preservation of historical buildings, cultural and heritage sites and wildlife through entrance fees.
6. Tourism may stimulate measures to protect the environment (landscape, wildlife, natural resources, buildings, etc.)

NEGATIVE IMPACTS

1. The presence of buildings and tourists may destroy the local environment and habitat of native animals.
2. The hospitality tourism industry contributes to waste issues, disposing food scraps, oil and chemical disposal, litter dropping can contribute to the pollution of water courses.

3. Many hospitality venues are noisy.
4. The hospitality and tourism industries are massive consumers of energy and water, e.g. electricity for air conditioning, refrigeration.
5. Tourism may result in footpath erosion.
6. Tourism can contribute people and traffic congestion.

A more complex situation regarding the impacts of tourism on the environment is shown in Table 1. A form of balance sheet has been created by Hunter and Green (1995) to compare the positive and negative effects of tourism in relation to key themes. More negative than positive effects do not mean negative effects are more important as quantity of impacts does not necessarily equate with quality of impacts.

Table 1: *Balance sheet of environmental impacts of tourism* (Hunter and Green, 1995)

Area Of Effect	Negative Impacts	Positive Impacts
Biodiversity	Disruption of breeding/feeding patterns. Killing of animals for leisure (hunting) or to supply souvenir trade Loss of habitat and species composition Destruction of vegetation	Encouragement to conserve animals as attractions Establishment of protected or conserved areas to meet tourist demands
Erosion and physical damage	Soil erosion Damage to sites through trampling Overloading of key infrastructure (e.g. water supply networks)	Tourism revenue to finance ground repair and site restoration Improvement to infrastructure prompted by tourist demand
Pollution	Water pollution through sewage or fuel spillage and rubbish from pleasure boats Air pollution (e.g. vehicle emissions) Noise pollution (e.g. from vehicles or tourist attractions: bars, discos, etc.) Littering	Cleaning programmes to protect the attractiveness of location to tourists
Resource base	Depletion of ground and surface water Diversion of water supply to meet tourists needs (e.g. golf courses or pools) Depletion of local fuel sources Depletion of local building material sources	Development of new/improved sources of supply
Visual or structural change	Land transfers to tourism (e.g. from farming) Detrimental visual impact on natural and non-natural landscapes through tourism development Introduction of new architectural styles Changes in urban functions Physical expansion of built-up areas	New use of marginal and unproductive lands Landscape improvement (e.g. to clear urban dereliction) Regeneration and or modernisation of built environment Re-use of disused buildings

□

Environmental impact of the use of natural resources and products report by van der Voet *et al.* (2009) broadly categorised environmental impact as:

1. Depletion of natural resources

2. Pollution
3. Physical impacts

DEPLETION OF NATURAL RESOURCES

Tourism development can put pressure on natural resources (land, water) when consumption increases in areas where resources are already scarce.

Water Resources — Water, especially fresh water, is one of the most critical natural resources. The tourism industry generally overuses water resources for hotels, swimming pools, golf courses and personal use of water by tourists. This can result in water shortages and degradation of water supplies and generating a greater volume of wastewater (Perez *et al.*, 2020).

In dry and hot regions like the Mediterranean, the issue of water scarcity is of particular concern. Because of the hot climate and the tendency of tourists to consume more water when on holiday than they do at home, the amount used can run up to 440 litres a day (Sunlu, 2003). Golf course maintenance can also deplete fresh water resources. In recent years, golf tourism has increased in popularity and the number of golf courses has grown rapidly. Malviya (2005) posits that tourism operations like golf courses require an enormous amount of water every day and as with other causes of excessive extraction of water, can result in water scarcity. If the water comes from wells, over pumping can cause saline intrusion into groundwater. Golf resorts are more and more often situated in or near protected areas or areas where resources are limited.

Local Resources — Tourism can exert great pressure on local resources like energy, food and other raw materials that may already be in short supply. Greater extraction and transport of these resources exacerbates physical impacts associated with their exploitation. Because of the seasonal character of the industry, many destinations have ten times more inhabitants in the high season than in the low season. High demand is placed upon these resources to meet the high expectations tourists often have (proper heating, hot water, etc.).

Land Degradation — Important land resources include minerals, fossil fuels, fertile soil, forests, wetlands and wildlife. Increased construction of tourism and recreational facilities has increased pressure on these resources and on scenic landscapes. Direct impact on natural resources, both renewable and non-renewable, in the provision of tourist facilities, can be caused by the use of land for accommodation and other infrastructure provision and the use for

building materials. Forests often suffer negative impacts of tourism in the form of deforestation caused by fuel wood collection and land clearing. For example, one trekking tourist in Nepal, an area already suffering the effects of deforestation, can use four to five kilograms of wood a day (UNEP, 1999).

POLLUTION

Tourism can cause the same forms of pollution as any other industry: air emissions, noise, solid waste and littering, releases of sewage, oil and chemicals, even architectural/visual pollution (Sunlu, 2003; Lan, 2019).

Air Pollution and Noise — Transport by air, road and rail is continuously increasing in response to the rising number of tourists and their greater mobility. The International Civil Aviation Organisation (ICAO) reported that 4.1 billion international air passengers worldwide were flown by scheduled air transportation in 2017, indicating a rise of 7.1% over 2016 (ICAO, 2019). One consequence of this increase in air transport is that tourism now accounts for more than 60% of air travel and is, therefore, responsible for an important share of air emissions. One study estimated that a single transatlantic return flight emits almost half the carbon dioxide emissions produced by all other sources (lighting, heating, car use, etc.) consumed by an average person per year (*ibid.*). Transport emissions and emissions from energy production and use are linked to acid rain, global warming and photochemical pollution. Air pollution from tourist transportation has impacts on global level, especially from carbon dioxide emissions related to transportation energy use and it can contribute to severe local air pollution. Some of these impacts are quite specific to tourist activities. For example, especially in very hot or cold countries, tour buses often leave their motors running for hours while the tourists go out for an excursion because they want to return to a comfortably air-conditioned bus (Sunlu, 2003).

Noise pollution from airplanes, cars, buses and recreational vehicles, such as snow mobiles and jet skis, is a problem of modern life. In addition to being a nuisance, stress and even hearing loss for humans, it causes distress to wildlife, especially in sensitive areas (Mengu, 2020).

Solid Waste and Littering — In areas with high concentrations of tourist activities and appealing natural attractions, waste disposal is a serious problem and improper disposal can be a major despoiler of the natural environment, rivers, scenic areas and roadsides. For example, cruise ships in the Caribbean are estimated to produce more than 70 000 tons of waste each year. Solid

waste and littering can degrade the physical appearance of the water and shoreline and cause the death of marine animals (UNEP, 2017).

In mountain areas, trekking tourists generate a great deal of waste (FAO, 2019). Tourists on expedition leave behind their garbage, oxygen cylinders and even camping equipment. Such practices degrade the environment with all the detritus typical of the developed world, in remote areas that have few garbage collection or disposal facilities.

Sewage — Construction of hotels, recreation and other facilities often leads to increased sewage pollution. Wastewater pollutes seas and lakes surrounding tourist attractions, damaging flora and fauna (Sunlu, 2003). Sewage runoff causes serious damage to coral reefs because it contains lots of nutrients and it stimulates the growth of algae, that cover the filter-feeding corals, hindering their ability to survive. According to the UNFCCC (2007), changes in salinity and transparency can have wide-ranging impacts on coastal environments and sewage pollution can threaten the health of humans and animals.

Aesthetic Pollution - Tourism often fails to integrate its structures with the natural features and indigenous architecture of the destination. Large resorts of disparate design may look out of place in a natural environment and may clash with the indigenous structural design. A lack of land-use planning and building regulations in many destinations has facilitated sprawling developments along coastlines, valleys and scenic routes (Belsoy *et al.*, 2012). The sprawl includes tourism facilities themselves and supporting infrastructure such as roads, employee housing, parking, service areas and waste disposal.

PHYSICAL IMPACTS

Attractive landscape sites, such as sandy beaches, lakes, riversides and mountain tops and slopes are often transitional zones, characterised by species-rich ecosystems (UNEP, 2017). Typical physical impacts include the degradation of such ecosystems. An ecosystem is a geographic area including all the living organisms (people, plants, animals and microorganisms), their physical surroundings (such as soil, water and air) and the natural cycles that sustain them (Sunlu, 2003). The ecosystems most threatened with degradation are ecologically fragile areas such as alpine regions, rain forests, wetlands, mangroves, coral reefs and sea grass beds. Threats to and pressures on these ecosystems are often severe because such places are very attractive to both tourists and developers. Physical impacts are caused not only by tourism-

related land clearing and construction, but by continuing tourist activities and long-term changes in local economies and ecologies (UNFCCC, 2007).

PHYSICAL IMPACTS OF TOURISM DEVELOPMENT

Two broad impacts of tourism were given as construction activities and infrastructure development (Belsoy *et al.*, 2012). The development of tourism facilities such as accommodation, water supplies, restaurants and recreation facilities, can involve sand mining, beach and sand erosion, soil erosion and extensive paving. In addition, road and airport construction can lead to land degradation and loss of wildlife habitats and deterioration of scenery (Sunlu, 2003).

Deforestation and intensified or unsustainable use of land — Construction of ski resort accommodation and facilities frequently requires clearing forested land. Coastal wetlands are often drained and filled due to lack of more suitable sites for construction of tourism facilities and infrastructure (Sigh, 2008; Lan, 2019). These activities can cause severe disturbance and erosion of the local ecosystem, even destruction in the long-term.

Marina development — Development of marinas and breakwaters can cause changes in currents and coastlines (Kudale, 2010). Furthermore, extraction of building materials such as sand affects coral reefs, mangroves and hinterland forests, leading to erosion and destruction of habitats. In the Philippines and the Maldives, dynamiting and mining of coral for resort building materials has damaged fragile coral reefs and depleted fisheries (Hall, 2001).

Overbuilding and extensive paving of shorelines — This can result in destruction of habitats and disruption of land-sea connections (such as sea-turtle nesting spots). Coral reefs are especially fragile marine ecosystems and are suffering worldwide from reef-based tourism developments. Evidence suggests a variety of impacts to coral reefs result from shoreline development, increased sediments in the water, trampling by tourists and divers, ship groundings, pollution from sewage, over-fishing and fishing using poisons and explosives that destroy the coral habitat (Lan, 2019).

PHYSICAL IMPACTS FROM TOURIST ACTIVITIES

Trampling — Tourists using the same trail over and over again trample the vegetation and soil, eventually causing damage that can lead to loss of biodiversity and other impacts. Such damage can be even more extensive when visitors frequently stray off established trails (Kudale, 2010). Trampling

impact on vegetation include breakage and bruising of stems, reduced plant vigour, reduced regeneration, loss of ground covers and change in species composition. Trampling impacts on soil include loss of organic matter, reduction in soil macro porosity, decrease in air and water permeability, increase in runoff and accelerated erosion (Sunlu, 2003).

Anchoring and other marine activities — In marine areas (around coastal waters, reefs, beach and shoreline, offshore waters, uplands and lagoons) many tourist activities occur in or around fragile ecosystems. Anchoring, snorkelling, sport fishing and scuba diving, yachting and cruising are some of the activities that can cause direct degradation of marine ecosystems such as coral reefs and subsequent impacts on coastal protection and fisheries (Kudale, 2010; Lan, 2019).

ENVIRONMENTAL IMPACTS OF TOURISM AT THE GLOBAL LEVEL

LOSS OF BIOLOGICAL DIVERSITY

Tourism, especially nature tourism, is closely linked to biodiversity and the attractions created by a rich and varied environment. It can also cause loss of biodiversity when land and resources are strained by excessive use and when impacts on vegetation, wildlife, mountain, marine and coastal environments and water resources exceed their carrying capacity (Tourism Sustaining, 2020; Belsoy *et al.*, 2012). This loss of biodiversity means loss of tourism potential.

Exotic species of insects, wild and cultivated plants, and diseases brought in by tourists and suppliers can cause enormous disruption and even destruction of ecosystems (FAO, 2019; IOM, 2018).

The effects on loss of biodiversity:

1. It threatens our food supplies, opportunities for recreation and tourism and sources of wood, medicines and energy (CBD, 2000; Sigh, 2008).
2. It interferes with essential ecological functions such as species balance, soil formation and greenhouse gas absorption (Sunlu, 2003).
3. It reduces productivity of ecosystems (Begum, 2019).
4. It destabilises ecosystems and weakens their ability to deal with natural disasters such as floods, droughts and hurricanes and with human-caused stresses, such as pollution and climate change (Belsoy, *et al.*, 2012).

DEPLETION OF THE OZONE LAYER

The ozone layer, is situated in the upper atmosphere (or stratosphere) at an altitude of 12-50 km, protects life on earth by absorbing the harmful wavelengths of the sun's ultraviolet (UV) radiation, dangerous to humans and animals in high doses (National Geographic , 2020). For example, one of the reasons scientists have put forward for the global decrease of amphibian populations is increased exposure to UV radiation. Ozone depleting substances (ODSs) such as CFCs (chlorofluorocarbons) and halons have contributed to the destruction of this layer. The tourism industry may be part of the problem. Direct impacts start with the construction of new developments and continue during daily management and operations (Sunlu, 2003). Refrigerators, air conditioners and propellants in aerosol spray cans, amongst others, contain ODSs and are widely used in the hotel and tourism industry. Emissions from jet aircraft are also a significant source of ODSs. Air travel is predicted to be contributing half of the annual destruction of the ozone layer (Ritchie and Roser, 2018).

CLIMATE CHANGE

Climate scientists now generally agree that the Earth's surface temperatures have risen steadily in recent years because of an increase in the so-called greenhouse gases in the atmosphere, that trap heat from the sun (*ibid.*). One of the most significant of these gases is carbon dioxide, that is generated when fossil fuels, such as coal, oil and natural gas are burned (for example in industry, electricity generation and automobiles) and when there are changes in land use, such as deforestation. In the long run, accumulation of carbon dioxide and other greenhouse gases in the atmosphere can cause global climate change, a process that may already be occurring (Belsoy *et al.*, 2012). Global tourism is closely linked to climate change. Tourism involves the movement of people from their homes to other destinations and accounts for about 50% of traffic movements; rapidly expanding air traffic contributes to the production of carbon dioxide (Mason, 2003). Tourism is thus a significant contributor to the increasing concentrations of greenhouse gases in the atmosphere. Air travel itself is a major contributor to the greenhouse effect. Passenger jets are the fastest growing source of greenhouse gas emissions (ICAO, 2019).

How global environmental impacts affect tourism:

1. NATURAL DISASTERS

Catastrophes like floods, earthquakes, wildfires, volcanoes, avalanches, drought and diseases can have a serious effect on inbound and domestic

tourism and, thus, on local tourism industries. Cyclone Idai affected tourism in the Chimanimani region of Zimbabwe and Beira region of Mozambique as tourism infrastructure was destroyed by heavy rains in 2019 (Mercy Corps, 2019)

2. *CLIMATE CHANGE*

Tourism not only contributes to climate change, it is also affected by it as well. Climate change is likely to increase the severity and frequency of storms and severe weather events that can have disastrous effects on tourism in the affected regions (Sunlu, 2003). Some of impacts that the world risks as a result of global warming are drought, diseases and heat waves. These negative impacts can keep tourists away from the holiday destinations. Hruby (2020) stated the effects of global warming to tourism as:

1. Less snowfall at ski resorts, meaning shorter skiing seasons in the Alpine region. In already hot areas like Asia and the Mediterranean, tourists will stay away because of intense heat, and out of fear of diseases and water shortage.
2. Harm to vulnerable ecosystems such as rainforests and coral reefs because of rising temperatures and less rainfall. A major risk to coral reefs is bleaching that occurs when coral reefs are stressed by temperature increases, high or low levels of salinity, low water quality and an increase in suspended sediments.
3. Rising sea levels, the result of melting glaciers and polar ice. Higher sea levels will threaten coastal and marine areas with widespread floods in low-lying countries and island states, increasing the loss of coastal land. Beaches and islands that are major tourism attractions may be the first areas to be affected.
4. Increased events of extreme weather, such as tornadoes, hurricanes and typhoons. These are already becoming more prevalent in tourist areas in the Caribbean, Southern parts of Africa and South East Asia. Cyclone Idai, for instance, heavily affected tourism in the Beira region of Mozambique. Wind damage, storm waves, heavy rains and flooding caused major losses in the local tourism sector.

HOW TOURISM CAN CONTRIBUTE TO ENVIRONMENTAL CONSERVATION:

Furthering from the balance sheet of environmental impacts of tourism, the tourism and hospitality industry have positive impacts on the environment through conservation. Tourism financial contributions, improved management of environment, environment awareness raising, protection and preservation

of resources and regulatory measures are enablers of positive tourism impact to the environment.

1. FINANCIAL CONTRIBUTIONS

Tourism can contribute directly to the conservation of sensitive areas and habitats. Revenue from park entrance fees and similar sources can be allocated specifically to pay for the protection and management of environmentally sensitive areas (Font *et al.*, 2004). Special fees for park operations or conservation activities can be collected from tourists or tour operators. Some governments collect money in more far-reaching and indirect ways that are not linked to specific parks or conservation areas. User fees, income taxes, taxes on sales or rental of recreation equipment, bed taxes and license fees for activities such as hunting and fishing can provide governments with the funds needed to manage natural resources (Sharma and Sharma, 2019). Such funds can be used for overall conservation programmes and activities, such as park ranger salaries and park maintenance (ZTA, 2017; Zimparks, 2015).

2. IMPROVED ENVIRONMENTAL MANAGEMENT AND PLANNING

Sound environmental management of tourism facilities and especially hotels can increase benefits to natural areas. But this requires careful planning for controlled development, based on analysis of the environmental resources of the area (Kiper, 2013). Planning helps to make choices between conflicting uses, or to find ways to make them compatible. By planning early for tourism development, damaging and expensive mistakes can be prevented, avoiding the gradual deterioration of environmental assets significant to tourism.

Cleaner production techniques can be important tools for planning and operating tourism facilities in a way that minimises their environmental impacts. For example, green building (using energy-efficient and non-polluting construction materials, sewage systems and energy sources) is an increasingly important way for the tourism industry to decrease its impact on the environment (Sunlu, 2003) and because waste treatment and disposal are often major, long-term environmental problems in the tourism industry, pollution prevention and waste minimisation techniques are especially important for the tourism industry (Nyaruwata, 2011; Mbasera *et al.*, 2016).

3. ENVIRONMENTAL AWARENESS RAISING

Tourism has the potential to increase public appreciation of the environment and spreading awareness of environmental problems when it brings people

into closer contact with nature and the environment (UNEP, 2017). This confrontation may heighten awareness of the value of nature and lead to environmentally conscious behaviour and activities to preserve the environment.

If it is to be sustainable in the long run, tourism must incorporate the principles and practices of sustainable consumption (Boz *et al.*, 2020). Sustainable consumption includes building consumer demand for products that have been made using cleaner production techniques, and for services, including tourism, that are provided in a way that minimises environmental impacts. The tourism industry can play a key role in providing environmental information and raising awareness among tourists of the environmental consequences of their actions. Tourism and hospitality businesses consume an enormous quantity of goods and services, moving them toward using those that are produced and provided in an environmentally sustainable way could have an enormous positive impact on the planet's environment (Sharma and Sharma, 2019).

4. PROTECTION AND PRESERVATION

Tourism can significantly contribute to environmental protection, conservation and restoration of biological diversity and sustainable use of natural resources (Sigh, 2008). Because of their attractiveness, pristine sites and natural areas are identified as valuable and the need to keep the attraction alive can lead to creation of national parks and wildlife parks.

In Hawaii, new laws and regulations have been enacted to preserve the Hawaiian rainforest and to protect native species (Mitchell *et al.*, 2005). Coral reefs around the islands and marine life that depend on them for survival are also protected. Hawaii now has become an international centre for research on ecological systems and the promotion and preservation of the islands' tourism industry was the main motivation for these actions. Grupo Punta Cana, a resort in the Dominican Republic, offers an example of how luxury tourism development and conservation can be combined. The high-end resort was established with the goal of catering to luxury-class tourists while respecting the natural habitat of Punta Cana. The developers set aside 10 000 hectares (24 700 acres) of land as a nature reserve and native fruit tree garden. The Punta Cana Nature Reserve includes 11 fresh water springs surrounded by a

subtropical forest where many species of unusual Caribbean flora and fauna live in their natural state. Guests can explore a "nature path" leading from the beach through mangroves, lagoons of fresh water springs and dozens of species of Caribbean bird and plant life. Other environmentally protective policies have been put into effect at the resort, such as programmes to protect the offshore barrier reefs and the recycling of wastewater for use in irrigating the grounds.

Tourism has had a positive effect on wildlife preservation and protection efforts, notably in Africa but also in South America, Asia, Australia and the South Pacific (Higginbottom *et al.*, 2001). Numerous animal and plant species have already become extinct or may become extinct soon. Many countries have therefore, established wildlife reserves and enacted strict laws protecting the animals that draw nature-loving tourists. As a result of these measures, several endangered species have begun to thrive again (IUCN, 1996; UNEP and WTO, 1992).

5. REGULATORY MEASURES

Regulatory measures help offset negative impacts; for instance, controls on the number of tourist activities and movement of visitors within protected areas can limit impacts on the ecosystem and help maintain the integrity and vitality of the site (Begum, 2019). Such limits can also reduce the negative impacts on resources. Limits should be established after an in-depth analysis of the maximum sustainable visitor capacity.

This strategy is being used in the Galapagos Islands, where the number of ships allowed to cruise in this remote archipelago is limited and only designated islands can be visited, ensuring visitors have little impact on the sensitive environment and animal habitats (UNEP, 1998).

CASE STUDY

THE IMPACTS OF TOURISM DEVELOPMENT AT DOMBOSHAVA NATIONAL MONUMENT IN ZIMBABWE

ELISHA WOYO AND EDITH WOYO (2016)

The Domboshava National Monument is situated 35km from Harare, the capital city of Zimbabwe. National Museums and Monuments of Zimbabwe

(NMMZ) manages Domboshava National Monument and was given National Monument status in 1936. The monument houses rock paintings and the rock paintings are found in a rock shelter on the eastern base of an extensive and imposing granite hill as shown in Figure 1. The hill, located in the Chinamhora Communal Lands, commands a magnificent view of the surrounding countryside. Major attractions include an Interpretive Centre or Site Museum, beautiful rock art panels, geological formations and a natural scenic environment such as abundant wooded vegetation, peaceful flowing stream, pools and walking trails.

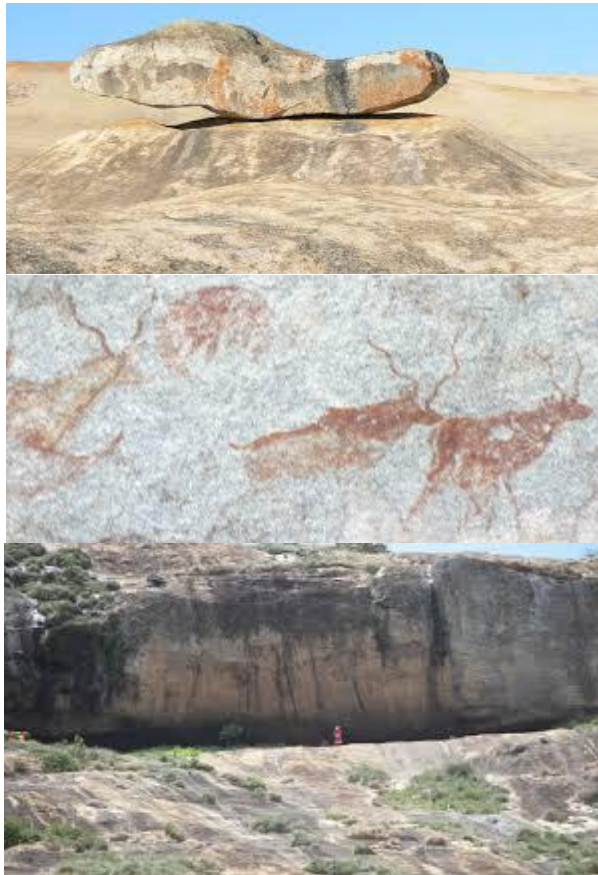




Figure 1: *Domboshava National Monument*

The tourism operations of the NMMZ is divided into five regions as indicated in Figure 2 and Domboshava National Monument falls into the Northern region.

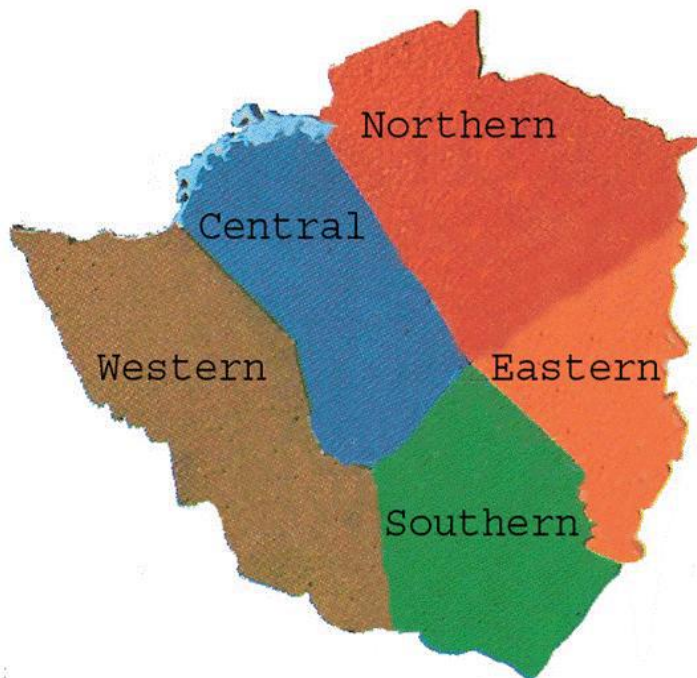


Figure 2: *Delimitations of NMMZ*

Questionnaires were administered to a sample of the Chinamhora residents, tour guides, tourism developers, site managers and local leaders to find out the impacts of tourism development at the Domboshava National Monument. The study used mean as a decision point at 2.5 and any mean value that was 2.5 and above was regarded as agree and below 2.5 was regarded as disagree. The survey instruments were coded to reflect whether they mentioned positive or negative tourism impact at the monument. Several positive impacts were identified by respondents as shown in Table2 below.

Table2: Impacts of tourism development at Domboshava National Monument

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Decision
Improvement of the Environment	50	1	2	2.52	Agree
Positive Image of the Monument Area	50	1	2	2.52	Agree
Source of Ecological and Heritage Information	50	1	2	2.52	Agree
Income Generation	50	1	2	2.56	Agree
Infrastructural Development	50	1	2	2.54	Agree
Desecration of Cultural Values	50	1	2	2.52	Agree
Spirituality of the Monument Compromised	50	1	2	2.52	Agree
Promotion of Cultural and Heritage Tourism	50	1	2	2.46	Disagree
Infrastructural Development Pressures	50	1	2	2.46	Disagree
Conservation of the Cultural Heritage Site	50	1	2	2.48	Disagree
Employment Creation	50	1	2	2.50	Agree
New Business Enterprises	50	1	2	2.42	Disagree
Valid N (listwise)	50				

Table 2 shows that 90% of the respondents indicated that tourism development has got more positive impacts on the Domboshava National Monument and the surrounding Chinamhora community. In addition, there was a general consensus that tourism development at the monument should continue in the future for the greater good of future generations of Chinamhora. Reactions of both residents to tourism and the tourism developers at the Domboshava National Monument are satisfied with the way tourism has been developing at the monument. Perceptions of personal impacts and community impacts show that on average, they are positive at both levels. Thus, on the overall, it was found that tourism development at the Domboshava National Monument has got more positive impacts than the negative outcomes of the development process. Chinamhora's residents view of tourism is more positive than negative. In Table 2, more positive impacts

were identified, while only four negative impacts were singled out by the participants in this study. This finding is quite encouraging when compared with negative impacts of tourism development that took place during the construction of certain tourist hotels in Zimbabwe.

SPECIFIC IMPACTS OF TOURISM DEVELOPMENT — PERCEIVED ENVIRONMENTAL IMPACT OF TOURISM DEVELOPMENT AT DOMBOSHAVA CAVES

The physical appearance of the monument has been enhanced by tourism development taking place at the monument ($m = 2.52$). It was also noted that there was improvement in terms of environmental conservation of the heritage and the surrounding environment of the area around the monument ($m = 2.52$). The study could not establish the claims that were made by Pwiti & Mvenge (1996) regarding the decline of the available habitat for local wildlife of the area. Negative impacts at the monument were cited as infrastructural development pressures and litter due to many vendors near the monument. Tourism development at Domboshava is luring more people to reside close to the site or have a business close by, thus contributing to development pressures.

CONCLUSION

Tourism and hospitality operations are hinged on the environment as a resource. The environment can be divided into the natural environment and the man-made environment, (built environment). Attractions for visitors are provided in or by the environment so any negative impact on the environment may lead to reduction in number of tourists and the opposite is true of positive impact on the environment.

Negative impacts of tourism on the environment include river pollution, marine pollution, soil erosion (footpath), litter, overcrowding, human and traffic congestion and aesthetic pollution all of which can affect ecosystems. Tourism can bring positive impacts by contributing to conservation of landscapes, preservation of buildings and generation of revenue from park fees and taxes. Above all, environmental awareness can be raised through tourism.

Impacts of tourism operations are felt at global level down to a localised location, with tourism development bringing with it human and species life threatening effects like heat waves, tornadoes, cyclones, all as a result of climate change. Tourism activities are also threatening their existence by these

changes at global levels. The need for careful, responsible, green and or sustainable planning and management in tourism and hospitality operations, is critical to minimise negative impacts of tourism and enhance positive impacts of tourism as visitor numbers continue to increase and tourists are travelling and found everywhere on mother earth.

DISCUSSION QUESTIONS

1. Identify the environment impacts of tourism and hospitality in your area. Group the impacts under headings “positive” and “negative” impacts. Try to draw the balance sheet of the impacts and draw your conclusions on that impacts are greater than others, giving justifications.
2. How may environmental impacts of tourism and hospitality operations vary from the operations in the city and countryside?
3. What are the impacts of tourism operations at global level and how do the impacts negatively affect tourism activities?
4. How do can the negative impacts of tourism at Domboshava Caves be minimised and the positive impacts maintained?
5. Choose an area you are familiar with and explain how climate change is affecting tourism and hospitality operations.