

The Ecological Aspects of Dark Tourism

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Abstract

Tourism generally traces its roots back to the seventeenth century with the grand tours of aristocrats. Today, it impacts all societies. It is hailed as a tool for development and economic diversification, while some denounce it as a new form of colonialism. Tourism is also a local and national political issue, as well as a crucial factor in globalization. Tourism varies according to its theme; it may be recreational, cultural, religious, sports, therapeutic, adventure tourism, or even environmental tourism, focusing on nature, protected areas, and the discovery of biodiversity. However, since the mid-1990s, a modern concept of tourism emerged — dark tourism — which refers to a tourism style centered around visiting places of tragic significance or associated with death, suffering, or natural disasters. Since the late twentieth century, this type of tourism has attracted increasing interest from researchers and academics, due to technological advancements and the digital transformation, which has contributed to the rapid circulation of news and increased people's curiosity about these sites, which bear stories of death, suffering, and devastation. Places and environments that have witnessed environmental disasters or traumatic events that have caused the most severe forms of environmental degradation are a feature of dark tourism. These areas highlight the effects of excessive human activity and revive the painful feelings of witnessing the tragedies of environmental destruction, thus renewing the commitment to the necessity of preserving and protecting the components of the ecosystem. Through this scientific contribution, we attempt to understand and define the ecological aspects of dark tourism by reviewing tragic environmental incidents, identifying the motivations of tourists to visit areas of degradation and devastation, and finally, identifying the various impacts or repercussions that dark tourism can have within its ecological context.

Keywords : Dark Tourism; Painful Memory; Environmental Awareness; Environmental Conservation.

Introduction

Increasing numbers of people are seeking novel and unique tourism experiences to satisfy a broad range of motivations. This has led to the fragmentation and emergence of more specific tourism types, such as dark tourism, which is distinguished from other forms of tourism by a high degree of diversity and individuality.

Dark tourism encompasses visits to real or reconstructed places associated with death, suffering, tragedies, or horror. From the perspective of dark tourism sites, it is important to understand what drives people to visit them. Death may be a readily apparent motivation and

is often part of a site's history, but it is not always the primary or explicitly acknowledged reason for a visit.

In this context, Sharpley and Stone acknowledge that, although recent academic studies have presented an increasing number of findings on the reasons for visiting dark sites, the field of motivations for visiting dark tourism destinations remains understudied.

Dark tourism entered the literature on tourism studies from the time of its first designation in 1996, through the work of Lennon and Foley (1996) and Seaton (1996). It has now become an established term referring to sites of genocide, the Holocaust, assassinations, crimes, prisons, or environmental disaster sites that have contributed to attracting visitors.¹

From a management and data-analysis perspective, it is clearly apparent that the integration of tourism into planning at national, regional, and local levels is increasing, and that new approaches to promoting sectors such as dark tourism are emerging. This study proposes analytical approaches that address the conceptual framework that dark tourism can encompass.

This scientific contribution aims to explore the concept of dark tourism, focusing on its conceptual methodology and the various terminologies used to describe its nature. It is equally important, when defining the conceptual framework of dark tourism, to review its historical background and its classifications. The study also seeks to focus on the psychological dimensions of dark tourists, their beliefs, feelings, and the internal motivations that impelled them to visit dark tourism attractions. The study concludes by highlighting the most important forms and classifications of dark tourism (Part One).

Part One: The Conceptual Framework of Dark Tourism

I. Definitions of Dark Tourism: Between Conceptual Convergence and Divergence

The term 'dark tourism' was initially used in the academic sphere and relates to visits to places associated with death, horror, and disasters — whether natural or man-made. A variety of designations have been employed to refer to this type of visit, owing to the fact that it encompasses a wide range of categories or forms. This diversity is also attributable to the degree or extent of darkness associated with each dark tourism site.

Before the term 'dark tourism' was coined, researchers had already published a substantial body of research on tourism at death-related sites in order to describe a specific area of tourism research. Boorstin (1964), as cited by Sharpley (2005),²

claimed that the first guided tourist excursion was organised in England in 1838 — a train trip to witness the execution of two murderers. Others, such as Rojek, subsequently explored the phenomenon of visitors to the graves of celebrities and sites associated with their deaths. Interest in death-related sites can be traced back to the eleventh century, motivated by religious considerations and pilgrimages to significant religious sites such as Jerusalem and the site of the crucifixion of Jesus Christ (peace be upon him).³

¹Dea Morina. Development of Dark Tourism Destinations in Central and Eastern Europe. Budapest Business School, Faculty of Commerce, Hospitality and Tourism, 2021, p. 5.

²Sharpley, R. 'Travels to the Edge of Darkness: Towards a Typology of Dark Tourism.' In C. Ryan et al. (eds.), *Taking Tourism to the Limits: Issues, Concepts and Managerial Perspectives*. Oxford: Elsevier, 2005, p. 218.

³Dea Morina, op. cit., p. 6.

All of this earlier research contributed to the study of 'dark tourism' — a term first used in 1996 in the *International Journal of Heritage Studies*, in research attributable to Foley and Lennon (1996), who mentioned dark tourism, and Seaton (1996), who employed the term 'thanatourism.' Several other designations have also been used, such as 'black spot tourism' and 'grief tourism' — the latter coined by Dann (1993).

Sharpley (2005), followed by Yan et al. (2016), examined a range of definitions and concluded that the term 'dark tourism' is the most widely used. Foley and Lennon defined dark tourism as: 'the presentation and consumption of real and commodified sites of death and disaster.' Seaton defined it as: 'travel to a place wholly or partly motivated by the desire for actual or symbolic encounters with death, though not necessarily violent death.'

Despite the close relationship between the concepts of dark tourism and thanatourism, fundamental distinctions can be drawn between them: dark tourism is a more contemporary term rooted in the postmodern era it covers, whereas thanatourism, as explained by Seaton, spans a longer historical period extending back to practices known as 'thanatopsis' — also called the contemplation of death.⁴

Lennon and Foley ultimately regard dark tourism as a radical shift in the way in which suppliers of tourism products approach the dimension associated with death, tragedies, and atrocities. They add that dark tourism is a product of the modern age and is closely linked to the political, economic, social, environmental, and technological landscape within which contemporary tourism products are made available.

II. Motivations and Objectives of Dark Tourism

Research points to numerous reasons for visiting dark tourism sites: educational experience; the desire to learn and understand past events; historical interest; self-discovery and identity; memory, commemoration, and nostalgia; empathy; reflection; curiosity; the search for novelty and authenticity; adventure; relaxation; and status, prestige, affirmation, and the sense of appreciation that such visits provide.

Prior research indicates that the motivations for visiting dark tourism sites are complex and multiple, though the majority are related to tourists' desire to connect with the uncanny (Stone, 2018). Motivation is determined by the purpose of the visit and the dark experience itself, which each visitor perceives differently. According to Biran et al. (2011), the motivations for dark tourism fall into four main categories:

1. Curiosity and the Need to See in Order to Believe

Curiosity and the need to learn are two intertwined concepts. Dark tourism cultivates curiosity and satisfies the desire to know about past suffering and pain. In this context, Ashworth (2004) proposed three principal reasons for visiting dark sites: curiosity about the unusual; attraction to horror; and the desire to empathise with the victims of tragedies. Yan, Zhang, Chang, and Luugo identify the curious type of dark tourist, who engages cognitively through learning about the subject.

⁴Seaton, T. 'Thanatourism and Its Discontents: An Appraisal of a Decade's Work, Some Future Issues and Directions.' In *The Sage Handbook of Tourism Studies*. 2009, p. 521.

2. Learning and Understanding

The desire to learn and understand stands out as a motivation associated with sites of death and/or heritage. While some visitors demonstrate a strong need for an emotional experience and a connection with their heritage, engaging — as Slade describes — in a 'profound heritage experience' and being emotionally affected by the 'dark' place, other visitors may be knowledge-seekers, more interested in an experience of enriching their knowledge than in an emotional experience, and aspiring to gain a deeper understanding.

Isaac et al. found that memory, knowledge acquisition and awareness, and exclusivity were important motivations for dark tourists; additionally, the consumption of dark tourism may grant the individual a sense of meaning and an understanding of the past disasters and terrifying events that disrupted the progress of life. The interest of tourists in places associated with death and tragedies may also be linked to educational objectives.

3. The Presence of Famous Tourist Attractions

Referencing Seaton (2002), Lennon and Foley (1996) began to focus on the fascinating, captivating factors that attracted tourists to travel to battlefields and cemeteries, affirming that certain aspects of this concept had been part of medieval and Western civilisation (Hartmann et al., 2018). In recent years, particularly since 2000, numerous studies — such as those by Dann and Seaton (2001) — have broadened their research into the interpretations of dark tourism and the reasons for visitor travel. Ashworth and Isaac note that all tourist places have a greater or lesser probability of being considered 'dark.' Accordingly, the same dark tourism site can evoke different experiences for different visitors — a site that one visitor considers 'dark' may not be so for another. Thus, the authors argue that no site is inherently and universally 'dark': even if described as dark, it is not always perceived as such by all visitors.⁵

4. Emotional Heritage Experience

Walter notes that most dark tourism is not driven by specific motivations, but is limited to parallel visits incorporated into a broader journey. Nevertheless, studies indicate that tourists visiting dark sites are not a homogeneous group, and that the factors underlying the visit are not the same for everyone. Moreover, the 'darker' motivation can take on distinctive levels of intensity. Thus, in addition to fascination and interest in suffering, visits to this type of place are also driven by personal, cultural, and psychological reasons, or by recreational purposes.

Furthermore, the identification of the motivations and feelings that characterise tourists who chose to visit dark tourism sites varies: their feelings are perceived as motivators for visiting a former concentration camp, while other feelings such as fear, despair, and awe are closely linked to certain internal motivations.⁶

Hartmann (2013) considers it essential to focus on the historical and political background of dark tourism in the tourism field. He noted that among the historical motivations for the emergence of the dark tourism concept between 1985 and 2005 was the removal of travel barriers between the Eastern and Western blocs (the Iron Curtain) during 1985–1995, which

⁵Stone, P.R. 'A Dark Tourism Spectrum: Towards a Typology of Death and Macabre Related Tourist Sites, Attractions and Exhibitions.' *Tourism: An International Interdisciplinary Journal*, 54(2), 2006, p. 145.

⁶Yan, B.J., Zhang, J., Zhang, H.L., Lu, S.J. and Guo, Y.R. 'Investigating the Motivation–Experience Relationship in a Dark Tourism Space: A Case Study of the Beichuan Earthquake Relics.' 2016, p. 80.

permitted citizens to travel to sites of former tragedies, including killing and extermination camps and detention centres.

Stone's (2006) notion of dark tourism extends beyond related tourist attractions. From this standpoint, diverse tourist sites that attract many visitors may become dark tourism sites by virtue of their history connected to death — for example, suicides at the Eiffel Tower, the graves in the Egyptian pyramids, the Valley of the Kings, the Taj Mahal, the funerary art in the Cairo Museum, and the terrorist attacks at Ground Zero.

III. Forms of Dark Tourism

Dark tourism has enjoyed unexpected popularity over the past twenty-five years. When the concept was first introduced alongside thanatourism, it seemed somewhat peculiar and likely to remain at the margins of tourism studies. That was not the case: dark tourism has established itself as a core subject in contemporary tourism research and continues to attract the interest of scholars from other fields.

A significant portion of researchers has focused on explaining and elaborating the problem of classifying dark tourism sites and determining the scope of darkness in these types of places. They found that there is a variation in the degrees of authenticity and horror, emotions, and tourist motivations — a variation that determines the level of darkness in these sites. Researchers disagree on classifying certain dark tourist attractions: some link them to thanatourism, but the majority of studies have established that dark tourism encompasses thanatourism, without constituting a clearly defined and distinct form of tourism.⁷

According to authenticity, dark sites can be distinguished by their level of authenticity, relying on a graduated value spectrum. Under certain conditions, significant political intervention in the design and interpretation of some sites undermines their authenticity. Miles (2002).

From a completely different perspective, Seaton distinguishes six groups of dark tourism sites based on the perceived level of morbidity, ranging from the darkest tourism product to the lightest — so-called 'grey tourism.' He holds that the lighter dark tourism products are specifically designed for educational or commercial purposes (Stone, 2006). This classification can greatly facilitate the categorisation of tourism offerings, and tourists can choose what they wish to visit based on their level of interest in death and suffering.

It may accordingly be said that dark tourism products are multifaceted, complex in design and purpose, and diverse in their nature; and it is clear that the term 'dark' as applied to tourism is very broad and does not easily reveal the multiple facets of dark tourism offerings.

Considering the aspects of dark tourism based on factors such as the characteristics, attributes, and perception of the tourist site is a sign of the wisdom that must be exercised when choosing the dark tourist attraction to visit. The production of dark tourism is influenced by consumer preferences, which are often guided by the media and marketing campaigns carried

⁷Viorel Mionel. 'Dark Tourism and Thanatourism: Distinct Tourism Typologies or Simple Analytical Tools?' Original scientific paper, Vol. 67, No. 4, 2019, p. 430.

out by tourism companies, and is also subject to the fluctuations of the political and cultural climate.⁸

Social anthropologists Rojek and Urry (1997) affirm that tourists themselves can influence the degree of darkness of dark tourist sites, according to the intensity of tourist experiences and visitor density at sites: light/dark, weak/strong. This may also be linked to the emergence of new events (wars, terrorist attacks, the collapse of authoritarian and repressive systems).

Dark tourism can take diverse forms according to tourist responses: it may take the form of horror, disgust, or unusual fascination, ultimately leading to the classification of tourism on the basis of feeling, its intensity and duration — which can clarify the concept of dark tourism; otherwise, we may conclude that all tourism is dark to some degree.

Following recent studies focusing on dark tourism and thanatourism, a long list of places considered subjects of visits associated with death, disasters, and tragedies has been compiled — which includes not amusement parks and art museums, but sites such as:

- War/conflict-associated sites (such as battlefields and war cemeteries);
- Holocaust-related sites (concentration camps, transit stations, and memorials);
- Detention/prison sites (including detention centres and prisons);
- Sites of genocide (Bosnia-Herzegovina, Rwanda, Cambodia, and others);
- Sites related to slavery and the transatlantic slave trade (West Africa, the United States, and Europe);
- Locations currently known as war zones/dangerous places;
- Sites affected by natural disasters;
- Cemeteries and places of worship;
- Sites of individual or collective crimes (in a non-war context);
- Ground Zero, New York — site of the terrorist attacks of 11 September 2001;
- Chernobyl — site of the nuclear disaster of 26 April 1986;
- Places where famous personalities died, such as the location of the death of the Queen of Great Britain;
- Tours known as ghost tours or unexplained supernatural phenomena.

Among the principal categories of dark tourism, the first consists of battlefields. Dark tourism also includes attractions associated with the great disasters that have marked human history. Cemetery tourism is among the most representative forms of dark tourism, as human beings tend to perceive the presence of death and its profound significance. Finally, ghost tourism constitutes an additional dimension of dark tourism, targeting tourists interested in supernatural phenomena who are drawn to communicate with ghosts and the supernatural in general.

⁸Gössling, S. 'Tourism, Climate Change and the Global Carbon Economy: A Systemic Analysis.' *Journal of Sustainable Tourism*, 2018, p. 23.

Part Two: Dark Ecological Tourism — A Path towards Balancing Memory and Responsibility

The power of the tourism industry, its growing global reach, and its economic strength in recent decades have produced contradictory and conflicting results. This has generated new opportunities and specialist tourism fields, but has also raised important critical reflections on how tourism is changing and its impact on the places and communities it inhabits — particularly in times of environmental, social, and political instability.

It has also shed light on how tourism is being used in relation to pressing contemporary issues such as climate change, as well as the broader processes of globalisation, commodification, and the economic and political foundations of leisure and recreational activities.⁹

Dark tourism refers to visits to places of death, disaster, atrocities, and other manifestations of human suffering. During the first twenty years since its official adoption as a sub-field of tourism studies, dark tourism research focused primarily on consolidating its existence and charting its boundaries — defining the phenomenon and establishing classifications and typologies. Current studies seek to provide a deeper understanding of the management and planning of tourism sites associated with death and atrocities, in service of the objectives of sustainable development.¹⁰

Dark tourism — defined as travel to sites associated with death, suffering, or atrocities — has emerged as a significant sub-field of contemporary tourism studies over the past two decades. It encompasses a wide range of destinations, from former concentration camps and battlefields to natural and industrial disaster sites. Academic interest has traditionally focused on the psychological motivations of dark tourists, ethical dilemmas, and commemorative functions; however, the environmental dimension of dark tourism remains insufficiently explored.

Sharpley (2020) broadens this discussion by linking the demand for travel associated with death and disaster to broader dynamics of tourism consumption, although the environmental aspects remain largely absent from such analyses.¹¹

As tourism expands globally, its environmental footprint has become a matter of pressing importance. Over-tourism, carbon emissions, habitat disruption, and waste generation are all well-documented consequences of mass travel. These issues are further intensified in dark tourism contexts, where sites are often fragile, historically significant, or environmentally sensitive.

Sites such as the Auschwitz-Birkenau Memorial, the Chernobyl Exclusion Zone, and the Hiroshima Peace Memorial Park attract millions of visitors annually, raising questions about the long-term sustainability of this pilgrimage-like tourism. The tension between preserving

⁹Gössling, S. *op. cit.*, p. 24.

¹⁰Nitasha Sharma, Annaclaudia Martini, Dallen J. Timothy. *Critical Theories in Dark Tourism*. Gruyter Studies in Tourism, Volume 12, 2025, p. 124.

¹¹Sharpley, R. 'Dark Tourism and the Demand for Death and Disaster.' In: *The Routledge Handbook of Tourism and the Environment*, 2020, p. 30.

the integrity of these sites and accommodating growing tourist interest poses a complex challenge for local governments, heritage managers, and environmental planners.

Furthermore, dark tourism is not confined to passive observation. Visitors may interact with the environment in physically impactful ways — such as crossing exclusion zones, collecting artefacts, or contributing to landscape degradation through unauthorised photography, vandalism, or pedestrian traffic. In certain cases, such as in Pripyat near Chernobyl, the fragile post-disaster ecosystem faces renewed environmental pressures owing to increasing tourist activity fuelled by popular media and social networks.

This discussion aims to examine the environmental consequences of dark tourism through the analysis of specific case studies and to identify the key environmental risks associated with this growing phenomenon. It also explores emerging solutions, including the role of virtual dark tourism and sustainable site management practices, which may offer a path towards balancing memory and responsibility. By addressing these dimensions, the study contributes to the broader discussion on sustainable tourism and highlights the importance of integrating environmental awareness into the planning and promotion of dark tourism experiences.

I. Illustrative Case Studies of Dark Ecological Tourism

1. Chernobyl: From an Exclusion Zone to a Tourist Attraction

On 26 April 1986, the Chernobyl Nuclear Power Plant was shut down for twenty seconds to test the effect of a power outage — what was supposed to be merely another test of electrical equipment. However, an operational error following the shutdown of the water turbines used to cool spent uranium and generate electricity caused the uranium in Reactor No. 4 to heat to the point of ignition. Seven seconds later, the temperature rise caused a chemical blast wave, which in turn released approximately 520 radioactive nuclides into the atmosphere.

According to official reports, approximately 8,400,000 people in Belarus, Russia, and Ukraine were exposed to radiation; 155,000 square kilometres of territory in the three countries were contaminated; agricultural land covering approximately 52,000 square kilometres was contaminated with the radioactive elements caesium; and approximately 404,000 people were relocated, although millions continued to live in an environment in which the ongoing residual effects of radiation exposure produced a range of harmful effects.¹²

Today, the Chernobyl zone in Ukraine is a popular dark tourism destination, attracting visitors to view the abandoned city of Pripyat and to experience the atmosphere of the post-nuclear disaster. Visits take place within the framework of organised tours with official tour operators, allowing visitors to see the buildings, schools, and parks that have remained untouched for more than thirty years, under careful monitoring that includes passing through security checkpoints and checking visitors after the visit to ensure the absence of radioactive contamination.

This site has come to attract increasing numbers of visitors, enabling dark tourists to explore the ghost city and the natural areas surrounding the nuclear reactor. There is also interest in discovering the environmental and radiological impact of the surrounding area and

¹²United Nations General Assembly Report, 'Continuing Effects of the Chernobyl Disaster,' 27 September 2019, p. 24.

in following the story of the zone's rehabilitation and transformation from an exclusion zone to a scientific and cultural tourist destination.

2. French Nuclear Tests in the Algerian Sahara: A Continuing Tragedy

Between 1960 and 1966, France conducted 57 nuclear tests in the Algerian Sahara, comprising both atmospheric and underground explosions; these were highly polluting and extremely dangerous. Among the most notable of these tests was the nuclear explosion known as 'Béryl' in May 1962, which caused a nuclear leak affecting the environment, groundwater, and soil, and which resulted in harm to both the environment and human beings, leaving victims among civilians, workers, and nomadic Bedouin who lived in the surrounding areas.¹³

These tests, conducted by France at sites such as Reggane and Ain Ekker, led to long-term radioactive contamination and ongoing health and environmental damage in the region that persists to this day, with nuclear radiation continuing to constitute a source of poisoning at certain sites — to say nothing of the permanent disabilities and physical impairments they caused.

The French nuclear tests in the Algerian Sahara represent a legacy of environmental and radioactive pollution bearing a colonial character that left profound humanitarian and environmental imprints that continue to be the subject of dispute between the two countries. The memory of the place, and of the people who lived through this tragedy, still bears the marks of grief and sorrow at the atrocities left by the explosions of the brutal enemy. It was therefore imperative to establish a national and local archival centre on the data of these attacks, both to preserve and safeguard national memory on the one hand, and to make it a historical and tourist monument bearing witness to the horror of France's colonial crimes on the other.¹⁴

A visitor to the city of Reggane, the village of Al-Hamidiyya attached to it, and the Inkker area in the Hoggar today witnesses first-hand the danger of radiation from the nuclear waste left by the 17 tests conducted by the French between 13 February 1960 and 16 November 1966. These tests caused the deaths of 42,000 Algerians and injured thousands of others through radiation, inflicting severe damage on both the environment and the population.

In this context, an expert report prepared by the International Atomic Energy Agency (IAEA) in 1999 and published in 2005 reveals that the areas surrounding the ground zeros of Reggane — including 40 areas in the village of Al-Hamoudiyya — and Ain Inkker remain to this day affected by significant levels of radiation.

Ammar Mansouri, a researcher in nuclear engineering, notes that the French military, in its tests under the names 'Gerboise Blanche' (White Jerboa), 'Gerboise Rouge' (Red Jerboa), 'Gerboise Verte' (Green Jerboa), and 'Gerboise Bleue' (Blue Jerboa), used thousands of inhabitants of the Reggane region and members of the Foreign Legion as guinea pigs, in addition to animals, insects, birds, and even plant seeds — none of which were spared from these tests. Victims were bound for several hours before each detonation. Those tests left nothing standing: their consequences were most severe for the inhabitants of the southern region, leaving thousands of deaths and injuries, whilst thousands of families continue to live in an environment contaminated by radiation. Mansouri further notes that the power of the

¹³Louafi Soumia. *Revue Maghrébine d'Études Historiques et Sociales*, Vol. 13, No. 1, p. 54.

¹⁴Samira Nekkadi. 'Effects of French Nuclear Tests in the Algerian Sahara.' *Insaniyat*, Nos. 51–52, 2011, p. 72.

nuclear bombardment reached 30 kilotons at the time, and despite the passage of decades since those nuclear tests, the diameter of the surrounding area remains acutely radioactive — which has compelled the authorities to ban entry to it.

II. Dark Ecological Tourism as a Path towards Sustainable Development

1. Social Reflections of Dark Ecological Tourism

The environmental dimensions of dark tourism can be interpreted through the prism of the ideology of ecology, understood generally as an ideology and movement aimed at protecting and preserving the environment. Ecology typically adopts a critical perspective towards human impact on the environment, affirming the view that environmental preservation is best achieved by limiting certain human activities.

Technological progress, investments, and policy reforms can contribute to the development of effective solutions for promoting more sustainable social development. From this perspective, dark tourism illustrates the tension between cultural and educational enrichment on the one hand, and environmental conservation on the other.

The integration of ecological principles into dark tourism management suggests that long-term sustainability requires not only technological innovation — such as virtual alternatives — but also a re-examination of tourism practices, giving priority to environmental considerations over unconstrained human activity. In this way, ecology provides a framework for reconsidering dark tourism in a manner consistent with ethical and environmental responsibility.

From a different angle, other strands of scholarship argue that ecology presupposes that achieving a sustainable future requires profound transformations in humanity's relationship with the natural world — what is sometimes termed the Anthropocene.

When considering the ideology of ecology and its critical stance toward human impact on nature, it becomes necessary to frame the discussion within the broader context of sustainable development. The concept of sustainable development can be interpreted in various ways, but at its core it represents an approach based on achieving a balance between economic growth, social welfare, and environmental protection. The objectives of sustainable development transcend regional contexts and acquire a global dimension.

In this regard, dark tourism can be viewed not only as a cultural and ethical phenomenon, but also as a challenge to sustainable development. It may accordingly be concluded that dark tourism is characterised by global features, requiring globally coordinated measures to ensure its effective and sustainable management.

In summary, this study highlights a fundamental gap: despite the maturity of dark tourism as a research field, its environmental dimension has not yet received proportionate academic attention. This article aims to address this gap by organising the environmental concerns relating to dark tourism and proposing sustainable and practicable management approaches grounded in best practices.

2. From Threat to Balance: The Environmental Impacts of Dark Tourism

The environmental impacts of dark tourism are best understood when studied through concrete data and case studies. While theoretical discussions highlight the potential risks of

excessive visitation, pollution, and environmental stress, the actual experiences of specific sites are what reveal the scale and diversity of these challenges.

This section draws on qualitative observations from major dark tourism destinations to illustrate how visits to various sites — ranging from memorials and disaster zones to abandoned cultural monuments — generate distinct environmental pressures. Through this lens, the discussion offers a comprehensive perspective on how dark tourism contributes to environmental degradation and how these effects can be mitigated through innovative strategies.¹⁵

3. Visitor Pressure and Over-Tourism at Dark Sites

Many dark tourism destinations have experienced a notable increase in visitor numbers over the past decade, driven by a combination of cultural appeal, media coverage, and improved access to previously restricted areas. For example, visitor numbers to Auschwitz-Birkenau¹⁶

reached approximately 2.32 million in 2019, while the Chernobyl Exclusion Zone saw an increase from around 16,400 tourists in 2015 to 124,001 tourists in 2019. Collectively, these figures highlight the accelerating growth in visitor numbers to dark tourism sites and the associated environmental pressures.¹⁷

While this growth generates economic opportunities, it also places significant pressure on both infrastructure and ecosystems. At Chernobyl, heavy pedestrian traffic near the Pripyat amusement park and the abandoned installations led to soil compaction, disruption of spontaneous regrowth, and the need for ongoing repair operations. Tourist activities also increased the risk of re-mobilising radioactive particles, particularly during dry seasons.

4. Environmental Impacts by Category

Quantitative data from various case studies reveal consistent patterns of environmental degradation associated with unregulated or mass dark tourism:

In Bulgaria, the Buzludzha Monument illustrates how the absence of formal tourism regulation can lead to environmental damage. As a former communist building located in a mountainous area, Buzludzha attracts 'ruin tourists' who often park their vehicles on unpaved tracks, damaging the surrounding meadows, entering illegally, and thereby exacerbating the degradation of the site and its landscape.

The table below illustrates the diversity of environmental impacts across dark tourism destinations, summarising common patterns of environmental degradation associated with various types of sites — from genocide memorials and disaster zones to abandoned monuments:

¹⁵Rumyana Popova and Vladimir Karadzhov. 'Ecological Influences of Dark Tourism.' University Publishing House 'Neofit Rilski', 2024, p. 152.

¹⁶Auschwitz-Birkenau is one of the largest Nazi concentration and extermination camps, established in 1941 as part of the Auschwitz complex. It is renowned as the principal centre of mass gassings during the Holocaust, particularly targeting Jews. Approximately 1.1 million people were deported there, and the majority were killed in the gas chambers and crematoria, making it one of the foremost symbols of Nazi genocide.

¹⁷Rumyana Popova and Vladimir Karadzhov. op. cit., p. 149.

Table 1: Environmental Impacts of Dark Tourism by Site Type

Site	Type	Annual Visitors	Ecological Concern
Auschwitz-Birkenau (Poland)	Genocide Memorial	2.3 million (2019)	Ground erosion, structural strain, emissions from tour buses
Chernobyl Zone (Ukraine)	Nuclear Disaster	124,000 (2019)	Soil compaction, flora damage, radiation mobilisation
Hiroshima Peace Park (Japan)	War Site	~1.5 million/year	Urban congestion, noise, CO ₂ emissions
Ground Zero (USA)	Memorial	~4 million/year	Urban heat, overconsumption
Buzludzha Monument (Bulgaria)	Abandoned Monument	est. 30,000/year	Vandalism, vegetation loss, illegal access impacts

Source: Rumyana Popova and Vladimir Karadzhov, 'Ecological Influences of Dark Tourism,' 2024.

5. Human-Animal Studies in Dark Tourism

It is important to raise the convergence between dark tourism and animal ethics as a primary model for post-humanist thought, in order to understand and classify the dark tourism entanglements between humans and animals — which aims to shift away from anthropocentrism and humanism. This analysis encompasses three main categories: the characteristics of animal suffering and death; the subjective nature of the human–animal relationship; and tourist supply and demand.

Sharma and Martini (2024) argue that the discussion on the ethical implications of dark tourism in its animal-related context must challenge human narratives and the boundaries of critical theories, in order to address the ecological crisis and justice, and to create balance between the binaries of nature, culture, human, and non-human.¹⁸

Fennell (2024) considers that animal studies can constitute a new critical perspective when observing the various ways in which animals are perceived — particularly when used as part of the tourist experience. He adds that one of the modern perspectives in dark tourism is the growing attention to the ethics of human–animal interaction in the tourism industry.

Lopez and Venegas (2021) critique humanism and discuss animal-based dark tourism through the example of bullfighting in Mexico, raising the question of why animals are killed and the ethical implications of dark tourism. In their critical work, Venegas and Lopez (2021) employed a post-humanist ethical perspective to analyse the work of bulls in their capacity to fight, which ultimately ends in their death — to the satisfaction of tourists and other spectators

¹⁸Nitasha Sharma, Annaclaudia Martini, Dallen J. Timothy. op. cit., p. 148.

in the bullfighting arena. Thus, the death of the animal is the culmination of the entire event and the peak of the tourist experience.

In their most recent work, David and Fennell (2024) shed light on the ethical implications of using animals in dark tourism environments. Human–animal studies in dark tourism emphasise animal sentience, agency, and welfare (employing theoretical frameworks such as post-humanism). Fennell (2015) identifies five distinct theories. There are many approaches to animal ethics that have important implications for human–animal interactions in tourism, such as: welfare, animal rights, utilitarianism, and biocentrism. Post-humanist frameworks focus on the experiences of non-human animals that are deliberately killed, or that die, or suffer in other ways as tourist purposes.

According to Phillips (2008), 120 billion animals live in captivity, either in zoos or as working or entertainment animals. The animal-based tourism industry contains many violent and dark elements that qualify it as a form of dark tourism if we apply the definition of dark tourism to a context that transcends the traditional anthropocentric perspective.¹⁹

Several researchers, including Fennell and Sheppard (2021), have discussed the need for ethical consideration of the rights and justice of vulnerable non-humans who serve the tourism industry — who are often forced into captivity, suffer physically and psychologically, endure varying levels of violence, suffer from illness, and often die prematurely.

III. Challenges of Sustainable Management of Dark Tourism Sites

Despite the growing interest in sustainable tourism, dark tourism often falls behind in applying environmental conservation standards. This is due to the sensitive nature of these sites, which give priority to historical and emotional integrity over infrastructural development.

Furthermore, tourist behaviour at dark sites tends to include emotionally charged or curiosity-driven actions — such as collecting souvenirs, touching artefacts, or deviating from designated paths — which increase environmental pressure.

A further key challenge lies in the seasonal concentration of visitors: many sites, particularly those associated with anniversaries or tragic events, experience sharp short-term surges, generating waste, transport congestion, and strain on local waste systems. The 2020 pandemic briefly mitigated these pressures, but led to a rebound in 2022 and 2023 with renewed intensity in these pressures, particularly due to patterns of retaliatory travel (World Tourism Organization, 2023). These trends reflect broader discussions on tourism's interaction with climate change and the need for adaptive management strategies.²⁰

Additionally, management difficulties are often compounded by conflicting priorities. While heritage experts emphasise the preservation of authenticity and memory, environmental planners emphasise the importance of ecological conservation. In the absence of coordination, this divide can lead to inconsistent regulations or insufficient enforcement. There is another financial obstacle: many dark tourism sites depend on limited funding, reducing the capacity to invest in green infrastructure, renewable energy, or monitoring systems that would help reduce environmental pressure.

¹⁹Nitasha Sharma, Annaclaudia Martini, Dallen J. Timothy. op. cit., p. 150.

²⁰Rumyana Popova and Vladimir Karadzhov. op. cit., p. 149.

IV. Virtual Alternatives and Impact Reduction

The virtualisation of dark tourism experiences is one of the prominent solutions. Platforms offering immersive virtual tours of Chernobyl, the September 11 Memorial, or Bulgaria's Buzludzha Island have emerged as environmentally friendly alternatives, particularly suited to educational use.

Some researchers argue that virtual dark tourism reduces environmental pressure at the site by 100%, while preserving the cognitive and emotional value of real visits. Furthermore, digital platforms can offer interactive educational layers, reinforcing messages of remembrance, peace, and environmental responsibility.

However, virtual tourism also faces limitations in simulating the authentic emotional experience that many dark tourists seek — particularly those motivated by personal or family connections. Therefore, the optimal model may lie in hybrid strategies: actual visits within strict environmental protocols, complemented by prior virtual visits or follow-up educational modules.²¹

In addition to reducing environmental impacts, virtual alternatives also contribute to enhancing accessibility and inclusivity, allowing the participation of groups that might otherwise be excluded from dark tourism owing to geographical, financial, or health constraints. In this way, virtual alternatives are not merely an environmental solution but also a means of democratising access to heritage, memory, and education.

With advances in virtual and augmented reality technologies, the potential for virtual dark tourism is likely to expand considerably in the coming years, offering ethical and sustainable experiences.

V. Recommendations and Implications for Policy and Tourism Planning

Ensuring the environmental sustainability of dark tourism destinations requires an integrated management framework that balances environmental protection, cultural sensitivity, and the integrity of memorials. Drawing on the findings of this study, several policy and practice directions merit highlighting.

First, site managers should develop visitor management plans that take environmental considerations into account: carrying capacity assessments, zoning strategies, and the establishment of designated pathways are of paramount importance for reducing erosion and habitat disruption. In addition, the introduction of timed entry systems and digital ticketing can help distribute visitor flows more evenly throughout the day and reduce congestion. These approaches are already being applied in institutions such as the Hiroshima Peace Memorial Museum and can serve as models for less organised destinations.

Second, the integration of environmental education emerges as an urgent need in the interpretive narratives of dark tourism sites. While most destinations focus on historical, cultural, or ethical themes, environmental perspectives are often absent. Interpretive panels, QR-code guided tours, and augmented reality applications can draw attention to environmental concerns and promote responsible environmental behaviour among tourists. At sites such as

²¹Eleni Mavragani. 'The Concept of Dark Tourism, Visitors' Motivation and the Entailed Dissonance in Sites Representation.' *Enlightening Tourism: A Pathmaking Journal*, 2022.

Chernobyl, for example, linking historical narratives to the story of environmental recovery would provide a more comprehensive understanding of human–environment interactions.

Third, unregulated or adventure-focused 'dark tours' pose serious challenges. These tours often arise through informal operators or social media platforms and can cause environmental damage and ethical violations. Tightening tour guide licensing regulations, strengthening surveillance in exclusion zones, and imposing fines for damage to natural or cultural heritage can contribute to reducing unauthorised activities. Collaboration with tourism platforms can also prevent the promotion of illegal or unsafe tours.

Fourth, the development of virtual and hybrid tourism models presents a highly promising strategy for mitigating environmental pressures. Digital reconstructions and immersive platforms offer an opportunity to experience dark heritage sites without contributing to their environmental degradation. Educational institutions, in particular, may benefit from these tools, while hybrid systems combining digital experiences with carefully managed physical visits can balance authenticity and sustainability.

Finally, there is a need for international guidelines addressing the environmental protection of dark heritage sites. Despite the global significance of many of these destinations, management standards remain fragmented. Organisations such as UNESCO, ICOMOS, and the UNWTO can establish minimum environmental standards for site conservation, introduce reporting mechanisms to monitor environmental stress, and create funding programmes to support environmental rehabilitation in areas where over-visitation has already caused harm.

As Hall (2019) affirms, the 2030 Agenda requires the systematic integration of sustainability principles into all forms of tourism — a framework within which dark tourism destinations should also be assessed. Aligning dark tourism with the 2030 Agenda for Sustainable Development, particularly with regard to SDG 11 on sustainable cities and communities and SDG 12 on responsible consumption and production, would provide a coherent policy framework for ensuring the long-term sustainability of these sensitive destinations.²²

The ecological focus on reducing human activity provides a useful perspective for addressing the environmental risks of dark tourism. From this standpoint, measures such as limiting visitor numbers, restricting access to fragile sites, and encouraging virtual alternatives can be justified as necessary strategies for preserving both the natural environment and the commemorative value of these destinations. These ideas are already reflected in practices such as visitor management plans, environmental education, the tightening of tour regulation, and the development of digital models — demonstrating how ecological principles can be translated into concrete sustainability measures.

Conclusion

Dark tourism continues to grow as a specialised and impactful form of travel, providing opportunities for remembrance, education, and reflection on the most tragic events in human history. Yet, as this article has demonstrated, its environmental impacts remain a dimension insufficiently addressed in academic and policy discourse. The growing popularity of dark sites

²²Angela Leite. 'Dark Tourists: Profile, Practices, Motivations and Wellbeing.' *International Journal of Environmental Research and Public Health*.

— from genocide memorials and abandoned ruins to nuclear disaster zones — has brought with it a range of environmental challenges, including over-tourism, resource consumption, pollution, and the degradation of fragile landscapes.

Through the analysis of specific case studies and visitor data, the article has identified the critical environmental risks associated with unmanaged or poorly planned dark tourism. Sites such as Auschwitz and Chernobyl demonstrate the pressing need for sustainable site management practices that are sensitive to the environment while respecting historical narratives.

The absence of environmental regulation — particularly in emerging or informal dark tourism destinations — exacerbates these risks and undermines the integrity of physical and symbolic landscapes over the long term.

The integration of digital technologies and virtual tourism solutions undoubtedly supports the mitigation of environmental pressure without compromising the cognitive or emotional depth of dark tourism experiences. Although virtual tools do not constitute a complete substitute for on-site visits, they can play a pivotal role in a low-impact hybrid model for future development.

Ultimately, the sustainability of dark tourism depends on multi-stakeholder cooperation, including local communities, heritage experts, ecologists, and policy-makers.

Alongside environmental concerns, there are important social and political implications: governance frameworks, regulatory oversight, and public policies play crucial roles in achieving the balance between heritage preservation, civic engagement, and local socio-economic development. The environmental footprint of this form of tourism must be viewed not only as a logistical or technical matter, but as an ethical and political imperative — to preserve the memory of the past without compromising the environmental future on the one hand, and to ensure the effective contribution of governmental and local authorities, alongside civil society, to the responsible management of sites on the other.

Further research is needed to quantify environmental impacts at dark tourism sites, to develop standardised sustainability indicators, and to assess the long-term success of mitigation strategies. In this way, dark tourism can evolve from a reflective practice into a fully responsible one — ethically, environmentally, and socially — contributing to broader discussions on environmental justice, civic responsibility, and policy innovation.

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