



**dark sky
ecotourism**

DARK SKY ECO TOURISM GUIDE

OFFERING RURAL COMMUNITIES
SUSTAINABLE TOURISM OPPORTUNITIES



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Executive Summary

Welcome to the Dark Sky Ecotourism Guide

The dark sky evokes basic human emotions and connects us all to the human story, of how we watch the dark sky, tell and create stories about the stars in the sky and beings in the dark.

With the deterioration of the quality of darkness due to increased lighting, we miss out on enjoying the beauty of the night sky, which was a self-evident part of existence on Earth until fairly recently.

At the same time, we endanger our fellow creatures who rely on the dark for their existence, such as insects, birds, bats and many more.

Guests are constantly seeking out opportunities to travel in a more immersive way, away from typical crowded tourist attractions towards more nature-based experiences.

Examples from Iceland show that nature-based tourism businesses find it relatively easy to add Dark Sky activities into their existing tourism offers. As Dark Sky Ecotourism requires that businesses follow a certain core ecotourism standard, analysis from examples from Iceland show that nature-based businesses already fulfill fully or partially many requirements of the Ecotourism standards.

As a business to be able to showcase the dark sky there needs to be a cooperation with the local community. This cooperation is essential to protect dark sky quality, which includes the issue of light pollution.

To ensure both quality experience and the protection of the natural world an approach like what is described here in this handbook is the way forward.



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Main Contributors to this guide

Dark Sky Ecotourism is an Erasmus+ KA2 Partnerships for cooperation and exchanges of practices vocational education and training project. The project began on 1 November 2021 with an end date of the 31st November 2023. It involves 5 partner organisations from 4 European countries. The following were the key contributors to this guide.



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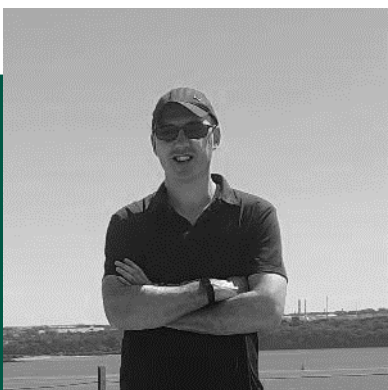
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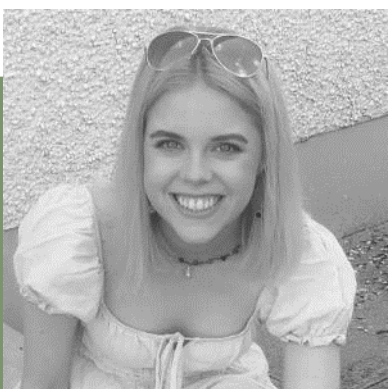
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SECTION 01

WHAT IS DARK SKY ECOTOURISM?



IN THIS SECTION

1.1 Introduction to Dark Sky Ecotourism?

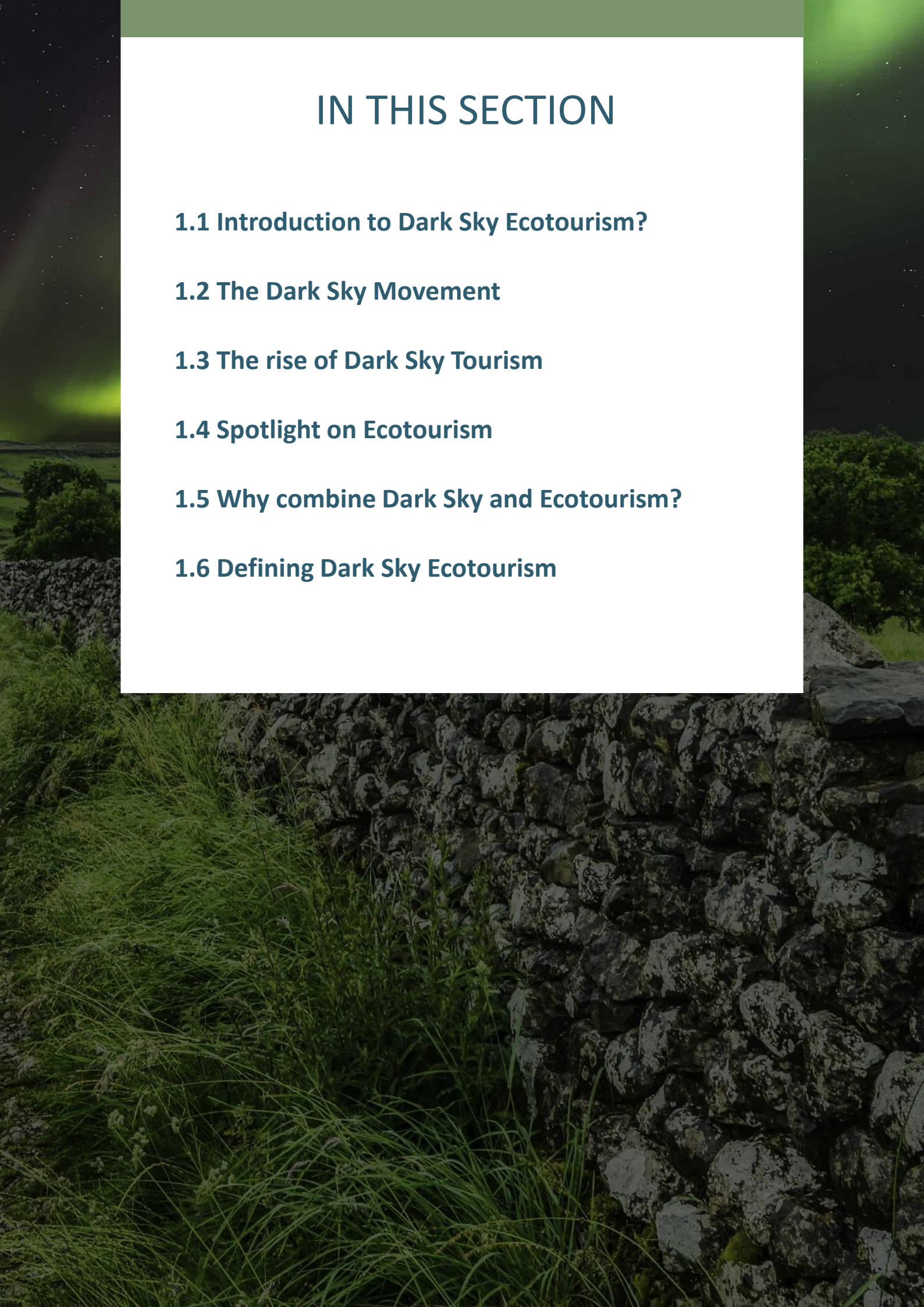
1.2 The Dark Sky Movement

1.3 The rise of Dark Sky Tourism

1.4 Spotlight on Ecotourism

1.5 Why combine Dark Sky and Ecotourism?

1.6 Defining Dark Sky Ecotourism



A night sky with the Milky Way galaxy visible, reflected in a body of water. The sky is dark with a dense field of stars and the colorful band of the Milky Way. The water in the foreground is calm, creating a clear reflection of the stars and the galaxy above. The overall scene is serene and awe-inspiring.

1.1 Dark Sky Ecotourism

What is Dark Sky Ecotourism and how can it benefit rural communities?

For all of human history, we have shared the night sky with the stars and planets providing a shared source of heritage and culture globally. The night sky serves as a fitting reminder that we all share the same earth and that we each have a role to play in protecting it.

We know that today much of Europe suffers from light pollution, meaning that we have to actively seek out destinations with low levels of light pollution in order to view the night sky. Dark Sky Ecotourism is an emerging niche area of tourism that is poised for growth. While many tourism initiatives focus on either dark sky or ecotourism, we have uniquely combined these seeing them as complementary frugal forms of tourism innovation that tap into two free resources – the night sky and nature.

In this guide, we focus primarily on rural Europe and the unique opportunity there is to develop its dark sky ecotourism potential.

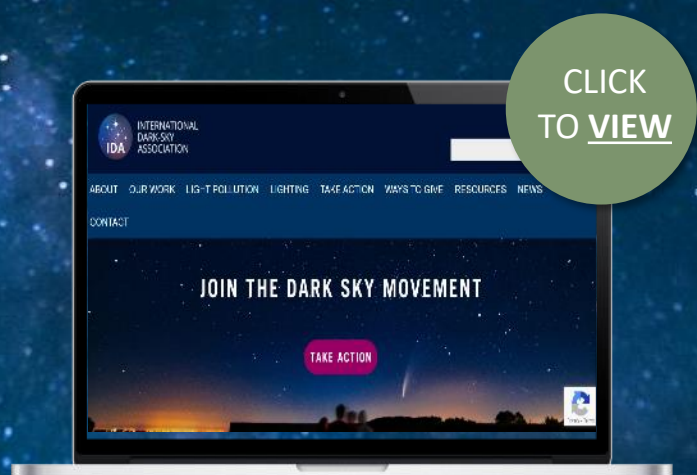
1.2 The Dark Sky Movement

The introduction of lightbulbs at the end of the 19th Century had a transformative effect on global communities. For the first time, we were able to work in the darkness in safer conditions, creating an acceleration in productivity and creativity which has resulted in the modern society we now enjoy throughout Europe and the rest of the World.

However, as the light bulb brought endless light, it also stole the night in the process. Until the widescale introduction of the lightbulb, people around the world could look up at the night sky and have a clear view of thousands upon thousands of stars, planets, comets, and even the breathtakingly beautiful band of the Milky Way. Today, 80% of Americans and one-third of all humanity can no longer see the Milky Way.

All flora and fauna evolved to depend on the natural cycle of night and day, and humans are no exception. The artificial light being emitted by human activities is having a detrimental effect on our ecosystems as well as our circadian rhythms. The natural night sky is also the global communities shared source of culture and heritage. The starry night has served as a source of inspiration for our ancestors for stories, religion, science and philosophy but recent generations are being stolen of that very view.

Thankfully, organisations such as the International Dark Sky Association are taking the lead and working towards protecting our darkness and treating it as the important asset it is.



1.3 The Rise of Dark Sky Tourism

With more people now living in urban areas than ever, darkness is becoming an increasingly rare asset for most. For these people it is now necessary to travel away from home to find a view of the night sky and experience the spiritual, health, and educational benefits it provides. This search for darkness has led to a new wave of Dark Sky Tourism or Astro tourism.

Dark Sky Tourism is one of the fastest-growing travel trends around the world as more and more places are working hard to preserve their dark skies and tap into this growing market.

Dark Sky Tourism consists of:



Visitors travelling to remote, unlit areas to observe celestial objects such as stars, planets, moons, nebulae, star clusters and galaxies

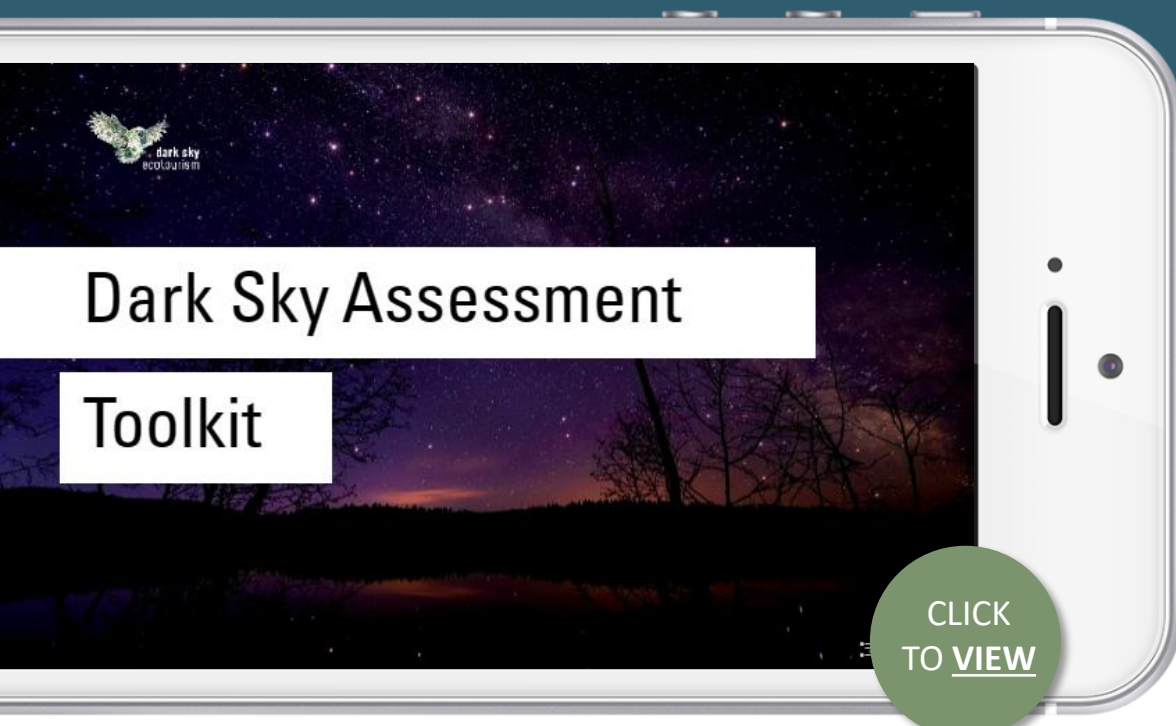


Visitors can look at the sky with the naked eye or with the help of binoculars or telescopes



The experiences can also be accompanied by other activities like storytelling or astrophotography

Want to learn more about Dark Sky Tourism and how to assess the quality of your night skies? Our Dark Sky Assessment Toolkit presents you can find information about useful tools to quickly and easily assess the quality of your dark skies. [Click to visit the toolkit \(EN\)](#)





1.4 Spotlight on Ecotourism

Ecotourism is about uniting conservation, communities, and sustainable travel.

The most widely accepted definition of ecotourism is:

“responsible travel to natural areas that conserves the environment, sustains the wellbeing of the local people, and involves interpretation and education” (TIES, 2015)

[More info](#)

One element of ecotourism we are particularly interested in is eco-volunteering. Eco-volunteering invites tourists to take an active role in conservation and environmental projects during their travels. Some examples of eco-volunteering roles include:

- Tree planting
- Litter picking
- Beach cleaning
- Wildlife surveying
- Water conservation
- Education and outreach programmes

Eco-volunteering is aligned to the concept of the tourists becoming more conscious consumers, i.e. people who consider the sustainable, environmental and social aspects of their purchasing decisions.

What are the Principles of Ecotourism?

Those who implement, participate in and market ecotourism activities should adopt the following ecotourism principles:

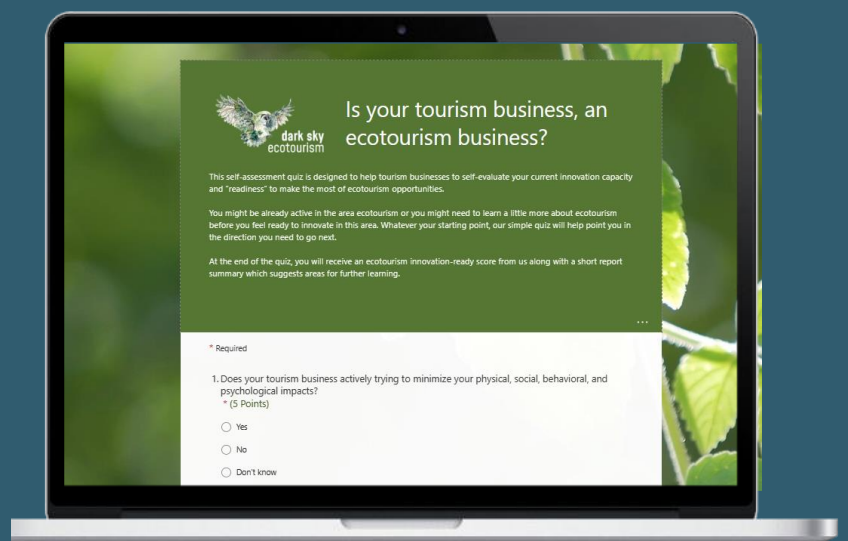
- Minimize physical, social, behavioral, and psychological impacts.
- Build environmental and cultural awareness and respect.
- Provide positive experiences for both visitors and hosts.
- Provide direct financial benefits for conservation.
- Generate financial benefits for both local people and private industry.
- Deliver memorable interpretative experiences to visitors that help raise sensitivity to host countries' political, environmental, and social climates.
- Design, construct and operate low-impact facilities.
- Recognize the rights and spiritual beliefs of the Indigenous People in your community and work in partnership with them to create empowerment.

[More info](#)

Is your tourism business an ecotourism business?

Take our short ecotourism quiz to assess if your tourism business is an ecotourism business and is delivering on the 8 ecotourism principles.

[Click to take the quiz \(EN\)](#)





1.5 Why Combine Dark Sky and Ecotourism?

In recent decades we have become much more mobile as travelling to remote areas has become more accessible to regular people creating a new untapped resource for regional economies. These new tourism markets can have a transformative effect on rural economies, both positive and negative. The growing tourism market can provide communities with employment growth, economic growth, social and cultural development, business development, and the ability to protect their natural environments when correctly managed. However traditional tourism does not come without its ramifications, such as seasonal unemployment and mass tourism. A lot of traditional tourism activities are highly seasonal leading to instability for workers year-round, and when visitors are not correctly managed, they can have a detrimental effect on local ecosystems and environments. Dark Sky tourism relies heavily on the preservation of one of our most under valued natural resources, light. **Ecotourism offers an alternative way of approaching tourism development and tapping into a whole new market of responsible consumers who are consciously aware of their footprint.**

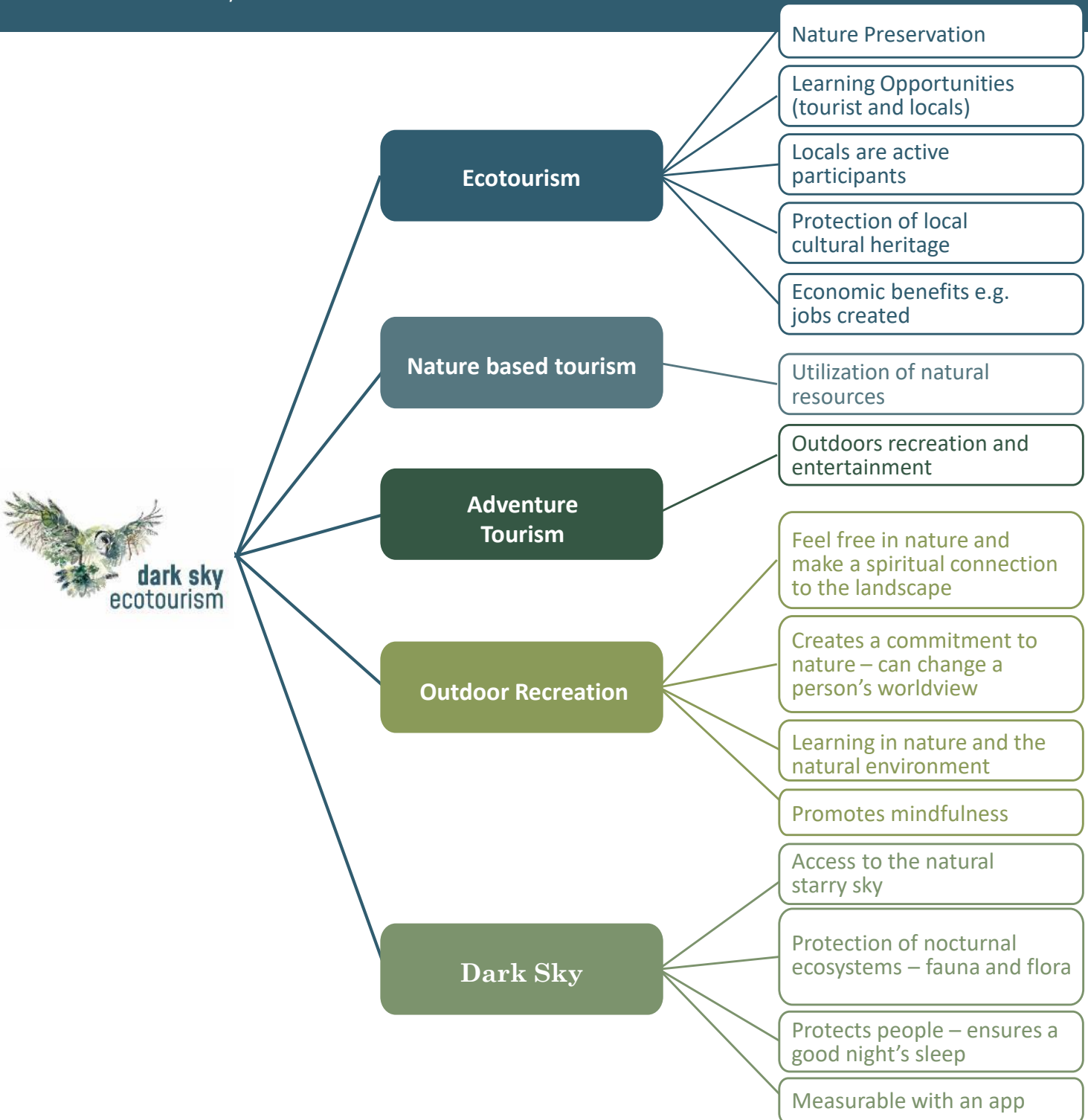
Dark Sky Tourism can have a transformative effect on the sustainability of regions' tourism industries by promoting off peak activities involving darkness. However, those of us who have planned an activity around viewing the night sky know that it cannot be depended on as conditions have to be right. We have already briefly touched on the effect of darkness on nature and ecosystems, so **combining the nature element of ecotourism with dark sky activities allows regions to offer a plethora of night-time activities that can be offered to visitors.**

Dark Sky Ecotourism offers a form of frugal innovation for destinations and tourism businesses as it taps into two free resources – the night sky and nature. Another main benefit for of becoming a Dark Sky Ecotourism company is that you can tap into the growing market of ecotourists. Ecotourists are willing to travel to rural areas, stay longer, spend more, and share their unique experiences on social media providing a form of free marketing.

1.6 Defining Dark Sky Ecotourism

Dark Sky Ecotourism offers a form of frugal innovation for destinations and tourism businesses as it taps into two free resources – the night sky and nature.

By combining elements of Dark Sky tourism, and elements of ecotourism, including adventure and nature-based tourism we can create 'Dark Sky Ecotourism Experiences'. Dark Sky Ecotourism consists of responsible travel to remote, unlit areas to observe nature at night in its undisturbed state, with education and conservation at the core of the activities. But what exactly does or could Dark Sky Ecotourism include? In the graph below, we define by way of 5 sub-categories (ecotourism, nature-based tourism, adventure tourism, outdoor recreation and dark sky) some of the key potential elements of dark sky ecotourism, areas in which products and services could be developed, and some of the features/benefits of each.



SECTION 02

DARK SKY
ECOTOURISM AND
FUTURE TOURISM
TRENDS



IN THIS SECTION

2.1 Introduction

2.2 Spotlight on Sustainable Tourism

2.3 The Role of Tourism in the 2030 SDG's

2.4 Spotlight on Regenerative Tourism

**2.5 The regenerative potential of Dark Sky
Ecotourism**



2.1 Introduction

In recent years, we have been presented with what the United Nations calls "an unprecedented opportunity to transform the relationship of tourism with nature, climate, and the economy". Dark Sky Ecotourism has a role to play in making the most of this opportunity as part of wider movement towards more sustainable and regenerative tourism.

You might wonder why we are now talking about sustainable tourism having previously gone into some detail about ecotourism. You might be thinking that the two are the same but actually, there are some notable differences. Let's explore them...

"Sustainable tourism takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment, and host communities." [GSTC Glossary of Sustainable Tourism Terms](#). From this definition, we get a sense that sustainable tourism includes conservation efforts, preserving cultural heritage and traditional values, and providing equitably distributed socio-economic benefits.

Sustainable tourism tends to consider and examine the economic, social, and environmental impacts of the travel industry as a whole, whereas ecotourism, as we learned earlier in this guide tends to lean deeper into the environmental. The most cited definition of ecological tourism (or "ecotourism") comes straight from the [International Ecotourism Society](#) (TIES), a nonprofit organization that's been dedicated to promoting ecotourism since 1990. We mentioned it earlier but as a reminder it says that ecotourism is "responsible travel to natural areas that conserves the environment, sustains the well-being of the local people, and involves interpretation and education."

Now that we have a handle on what sustainable tourism is. Let's add regenerative tourism into

the mix. Regenerative tourism which is appearing with increasing frequency in both tourism and mainstream news feeds, refers to the attempt to solve cultural or ecological challenges at a destination and/or issues which have been principally generated by climate change or over-tourism.

Regenerative tourism is linked to a reconnection with nature, a more authentic connection to local people, and building community with fellow travelers.

So, what should we aim for sustainable or regenerative? The following insight from Portia Hart, Founder of the Green Apple Foundation gives us a good indication...

'The word sustainable implies "to enable the continuation of things as they are". In an environment that has not been degraded and where communities are thriving, a new tourism development should aim to sustain that status quo. In a destination where poverty is rife, biodiversity is waning, resources are strained and unfairly distributed however, it is preferable not to sustain the situation but to improve it. We live in a world where most tourism destinations need some form of repair or restoration – social or natural – and so perhaps the time has come for all tourism to move beyond sustaining, into regeneration.'

In this section of the guide, we will explore both sustainable and regenerative tourism as key macro-tourism trends for the 21st century.

2.2 What is Sustainable Tourism?

“Tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities” UNWTO

Sustainable tourism can involve the following:

- Sustaining and improving the natural and physical built environment to enhance natural, cultural and heritage values, stories and history
- Educating tourists about environmental issues and impacts
- Improving and restoring natural ecosystems and their values
- Ensuring derelict land and buildings are brought back into use and maintained
- Improving the quality of the local environment and facilitate to further enjoyment and local development
- Facilitating environmental schemes and improvements to the natural and built environment
- Conservation work to enhance the qualities and features of the landscape
- Enhancing access to and improvements of rural areas
- A focus on the regeneration and revitalisation of urban and rural areas; particularly villages, remote culture and heritage attractions and communities
- Providing awareness of the local area natural environments, culture, heritage and scenic beauty and further promote conservation efforts
- Supporting a broader, more vibrant and active community by attracting arts, music and cultural events
- Improving community health and wellbeing through increased diversity of leisure, recreation, arts and cultural services
- Facilitating improved access by sustainable modes of transport
- Respecting the local community, its values and benefit
- Providing employment and provide economic and social benefits

Sustainability has increasing importance for both ecological and policy driven reasons. Key highlights and insights:

> Transport-related emissions from tourism are expected to account for 5.3% of all man-made CO₂ emissions by 2030, up from 5% in 2016 (UNWTO, IFT 2019)

> By 2050, hotels will need to reduce their carbon footprint by 90% to be in line with the Paris Climate Agreement (EHL, 2019)



The Role of Tourism in the 2030 SDG's

The Sustainable Development Goals (SDGs), otherwise known as the Global Goals, are a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity.

There are 17 SDGs and 169 SDG targets that seek to offer the world a new and improved direction. It is widely agreed, that tourism, like every other industry can and must play a significant role in delivering sustainable solutions for people, the planet, prosperity and peace.

Want to learn more?

The [Tourism for SDGs platform](#) was developed by UNWTO is aimed at policymakers, international organizations, academia, donors, companies, and all tourism stakeholders and encourages them to engage in SDG implementation strategies.

The platform's three main features, Learn, Share and Act. It features calls for action, conversation and collaboration towards a sustainable tourism sector.





2.4 Spotlight on Regenerative Tourism & Destination Stewardship

Regenerative tourism represents a sustainable way of traveling and discovering new places. Its main goal is for visitors to have a positive impact on their holiday destination, leaving it in a better condition than how they found it.

According to a recent Amadeus survey, 37% of travelers surveyed think opportunities for travelers to be involved in the preservation of tourist destinations will help the industry to become more sustainable in the long term. Booking.com shares that 68% of global travelers would consider participating in cultural exchanges to learn a new skill, followed by a volunteering trip (54%) and international work placements (52%).

Regenerative tourism is designed to make a difference in both the lives of others and oneself. Volunteering trips are an example of the experiences that have gained popularity from this trend. To capitalize on this trend, tourism businesses should focus on offering unique and purposeful activities along with your usual tourism products and services.

There are many regenerative tourism approaches that can be applied. Destination Stewardship is one that is of interest to Dark Sky Ecotourism, especially for businesses or regions just about to make an entry into this niche tourism area.

Destination stewardship is defined by the Global Sustainable Tourism Council as “a process by which local communities, governmental agencies, NGOs, and the tourism industry take a multi-stakeholder approach to maintaining the cultural, environmental, economic, and aesthetic integrity of their country, region, or town.”

Destination stewardship is about protecting the very qualities that make a place first and foremost a wonderful place to live, with the added benefit of being a wonderful place to visit. Samantha Hogenson Bray is the Managing Director of the Center for Responsible Travel (CREST) explains that

“this is important because a healthy and happy community is needed to support a healthy and happy tourism industry long-term”.



2.5 Dark Sky Ecotourism as an emerging potential Future Tourism Trend

Both Dark Sky and Ecotourism have tremendous sustainable and regenerative tourism potential. In areas with dark skies and bountiful flora and fauna, it can be used to sustain and preserve. In areas with light pollution and fragile environmental ecosystems, it can be deployed for regenerative purposes.

Dark sky ecotourism checks a lot of sustainability boxes. It disperses visitors geographically, seasonally, and over the course of a day. What's more, the positive environmental, cultural, and economic effects of dark sky tourism most often extend well beyond a given site.

Dark sky ecotourism can be framed as an opportunity for regenerative tourism – In our case studies we learn how visitors can have a positive impact on a destination, leaving it in better condition than they found it.

We have been learning how work to save our dark skies forms a crucial part of wildlife protection and conservation efforts from both a sustainability and a regenerative perspective. And it is truly important work, as a growing body of research show us that excessive and improper lighting not only robs us of our night skies, it also disrupts our sleep patterns and endangers nocturnal habitats.

WATCH: Saving the Dark is a documentary created in association with the International Dark Sky Association which explores the need to preserve night skies and what we can do to combat light pollution.

[CLICK
TO VIEW](#)

SAVING THE DARK

The ever-increasing speed of technological advancements and changing consumer expectations make it difficult to forecast the future of the tourism industry.

However, by looking at macro-trends of sustainability and regeneration, we can get a sense of what direction it might take and how Dark Sky Ecotourism can play a role.





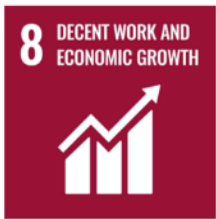
Pollution in all forms (including light) is detrimental to our health. Dark Sky Ecotourism can promote good health and wellbeing



Dark Sky Ecotourism encourages an appreciation for the night sky, nature and science. It can attract people to a career in STEM

Some of the ways Dark Sky Ecotourism can deliver on the SDG's

In 2015, the United Nations published 17 sustainable development goals designed as a 'roadmap' for all countries to follow regarding sustainable development.



By focusing on off-peak tourism hours, Dark Sky Ecotourism can create new jobs and economic opportunities for rural communities and small businesses



Dark Sky Ecotourism (in particular destination stewardship lead initiatives) puts additional pressure on local governments to invest in more eco-friendly lighting solutions



Tourism, particularly overtourism can be detrimental to climate change. Dark Sky Ecotourism can bring about positive change



Light pollution negatively affects nocturnal and migratory animals, even the hatching of sea turtles. Dark Sky Ecotourism can help promote better outcomes



Dark Sky Ecotourism can be used to highlight otherwise unknown cultural heritage such as astro folklore, it can also be used to bring diverse communities and tourism actors together



Dark Sky Ecotourism in particular destination stewardship approaches, provide a framework for private, public and governmental institutions to work together for the betterment of tourism

Dig Deeper into the SDG's:

[THE 17 GOALS | Sustainable Development \(un.org\)](https://un.org)

[Astronomy and Sustainable Development | National Schools' Observatory \(schoolsobservatory.org\)](https://schoolsobservatory.org)

SECTION 03

WHO ARE DARK SKY
ECOTOURISTS?
EXISTING AND
POTENTIAL



IN THIS SECTION

3.1 Introduction

3.2 Spotlight on Dark Sky Tourists

3.3 Spotlight on Ecotourists

3.4 Spotlight on Adventure Tourists

3.5 Spotlight on Wellness Tourists

3.6 Spotlight on Slow Tourists

3.7 Spotlight on Science Tourists



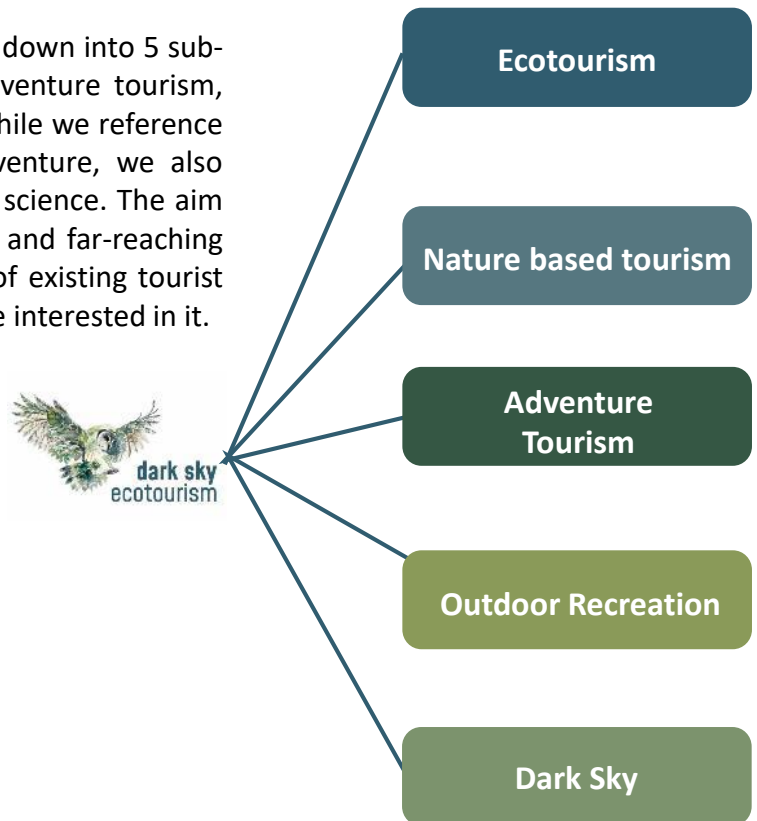
3.1 Introduction

As we gain a deeper understanding of what Dark Sky Ecotourism is, we can start to imagine the type of tourist that would be interested in what dark sky ecotourism has to offer.

Earlier in this guide, we broke dark sky ecotourism down into 5 sub-categories (ecotourism, nature-based tourism, adventure tourism, outdoor recreation and dark sky). In this section while we reference many of these - ecotourism, dark sky and adventure, we also introduce some others namely wellness, slow and science. The aim here is to introduce and give a sense of the wide and far-reaching potential of dark sky ecotourism and the variety of existing tourist customer profiles (or buyer personas) that might be interested in it.

Why such a wide scope? In section O4 of this guide, we delve deeper into the development of tourism products and services. What we found and (what you will too) is that there is no one size fits all approach. The best practice case studies we present in section O4 vary greatly.

Each has been developed to reflect opportunities presented by the night sky, the natural resources/assets at each location and the diligence and mindfulness of the various tourism promoters to create products and services with either a sustainable or regenerative focus.



The variety of dark sky ecotourism products, services and regions are such that they can appeal to a wide variety of tourists, so let's take a closer look at what we deem to be some of the key ones.



Dark Sky Tourists



Ecotourists



Adventure Tourists



Wellness Tourists



Slow Tourists



Science Tourists



3.2 Spotlight on Dark Sky Tourists

Dark Sky Tourism is a sustainable and stewardship-promoting form of ecotourism combining elements of astrotourism, cultural heritage tourism, nature and wildlife tourism, health and wellness tourism, along with night sky stewardship, responsible use of the nighttime environment, and best lighting practices.

Who are Dark Sky Tourists and what do they want?

- They are interested in finding peace and serenity in the outdoors
- Enjoy being outdoors in nature and escape the bright lights of cities
- Many are nature lovers, casual star gazers or professional/amateur night photographers or astronomers
- Astro Enthusiasts with high interest in Dark Sky Tourism are typically more active on holidays

Some [research reports](#) that Dark Sky Tourism is higher among males, those aged 34-54 and families (particularly young families). The top-ranked dark sky tourism activities tend to be wildlife at night, dinner under the stars, visit an observatory and public stargazing.

[More info](#)





3.3 Spotlight on Ecotourists

Ecotourism is environmentally responsible travel to relatively undisturbed natural areas, in order to enjoy and appreciate nature and local culture in a way that promotes sustainability and conservation.

Who are EcoTourists and what do they want?

- They tend to be one of the following: Adventure Seekers, Nature Lovers, Conservationists, Relaxation Seekers
- to experience something different from their normal lives
 - to learn about new cultures and lifestyles
 - to immerse themselves in nature
- to relax and get away from the stresses of their everyday lives
 - to do their part to preserve the environment

Most people who turn to ecotourism live in urban areas. Ecotourism gives them a chance to break out of their routines and experience something fresh, new and natural. From reducing stress to improving mental health, people are increasingly looking for ways to unplug from technology and reconnect with the natural world. This is one of the main attractions of ecotourism

[More info](#)



3.3 Spotlight on Adventure Tourists

Adventure tourism is a type of tourism that involves seeking out new and exciting experiences. This can include activities like hiking, camping, extreme mountaineering, bungee jumping, skydiving, and more.

Who are Adventure Tourists and what do they want?

- thrill-seekers who are looking for an adrenaline rush
- typically open to new experiences and enjoy taking risks
- often relatively affluent or at least willing to bear the high costs associated with adventure
- travelers who seek authentic experiences, get an up-close and personal view of the culture and landscape that they would not get on a traditional tourist tour
- they enjoy the physical challenge of an activity and have a sense of accomplishment and pride once they complete their "mission"

While some may argue that adventure tourism can be too risky, others see it as an opportunity to push themselves to their limits and discover new things about themselves.

[More info](#)



3.4 Spotlight on Wellness Tourists

The Global Wellness Institute defines wellness tourism as travel associated with the pursuit of maintaining or enhancing one's personal wellbeing.

Who are Health and Wellness Tourists and what do they want?

GWl identifies two types of wellness travelers:

- **Primary wellness traveler:** A traveler whose trip or destination choice is primarily motivated by wellness.
- **Secondary wellness traveler:** A traveler who seeks to maintain wellness while traveling or participates in wellness experiences while taking any type of trip for leisure or business
- Wellness travelers are looking to continue their wellness lifestyle during travel, and this lifestyle may encompass healthy eating, exercise/fitness routines, mind-body practices, nature experiences, connections with local people and culture

Unique and authentic experiences can be built upon indigenous healing practices; ancient/spiritual traditions; native plants and forests; special muds, minerals and waters; vernacular architecture; street vibes; local ingredients and culinary traditions; history and culture; etc

[More info](#)





3.5 Spotlight on Slow Tourists

Slow tourism is an approach to tourism, which is presented as an alternative to mass tourism. It forms part of the wider sustainable tourism movement and can be seen as the tourism industry equivalent of the '*slow food*' movement, which emphasises the enjoyment of local food and traditional recipes over fast food and mass consumption.

Who are Slow Tourists and what do they want?

- slow tourists seek meaningful and authentic engagement with the culture, history and characteristics of a travel destination
- they savour opportunities for self-reflection, and more time to enjoy travel experiences and take things in properly
- they enjoy a more environmentally friendly means of enjoying travel experience
- they have concern about the local environment and sustainability

While slow travel can be an example of eco-tourism, it is also a distinct concept of its own, with unique defining traits or characteristics. Slow tourism is primarily characterised by tourists prioritising fewer, more meaningful experiences and focusing their activities in the local area.

[More info](#)





3.6 Spotlight on Science Tourists

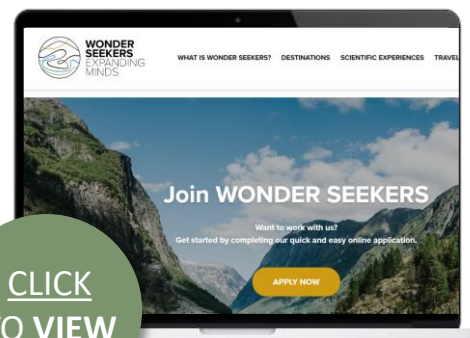
Science tourism is when people travel outside one's usual environment to learn about or participate in science. It can include school tours or visits from researchers, academics or hobby scientists to scientific landmarks, including museums, laboratories, observatories and universities. It also includes visits to see events of scientific interest, such as solar or lunar eclipses.

Who are Science Tourists and what do they want?

- Science tourists range from the very young to seniors
- They are passionate or curious about science or the history of science
- They want to take in all the traditional elements - scenic vistas, new sights and sounds, relaxation and fun - and add an extra dimension of scientific, cultural and environmental learning
- they like to seek out opportunities for experience-based learning

Tailored Business Support if you are interested in Science Tourism

Wonder Seekers offers a powerful platform and tool to small tourism promoters from the Finland, Ireland, Northern Ireland, United Kingdom, Sweden, Greenland, Iceland and Norway to develop new science-based tourism products and to reach new markets. This Interreg Europe funded project website is home to multitudes of case studies of science-based tourism experiences as well as dedicated business portal.



[CLICK TO VIEW](#)

SECTION 04

DARK SKY ECOTOURISM PRODUCTS, SERVICES AND REGIONS



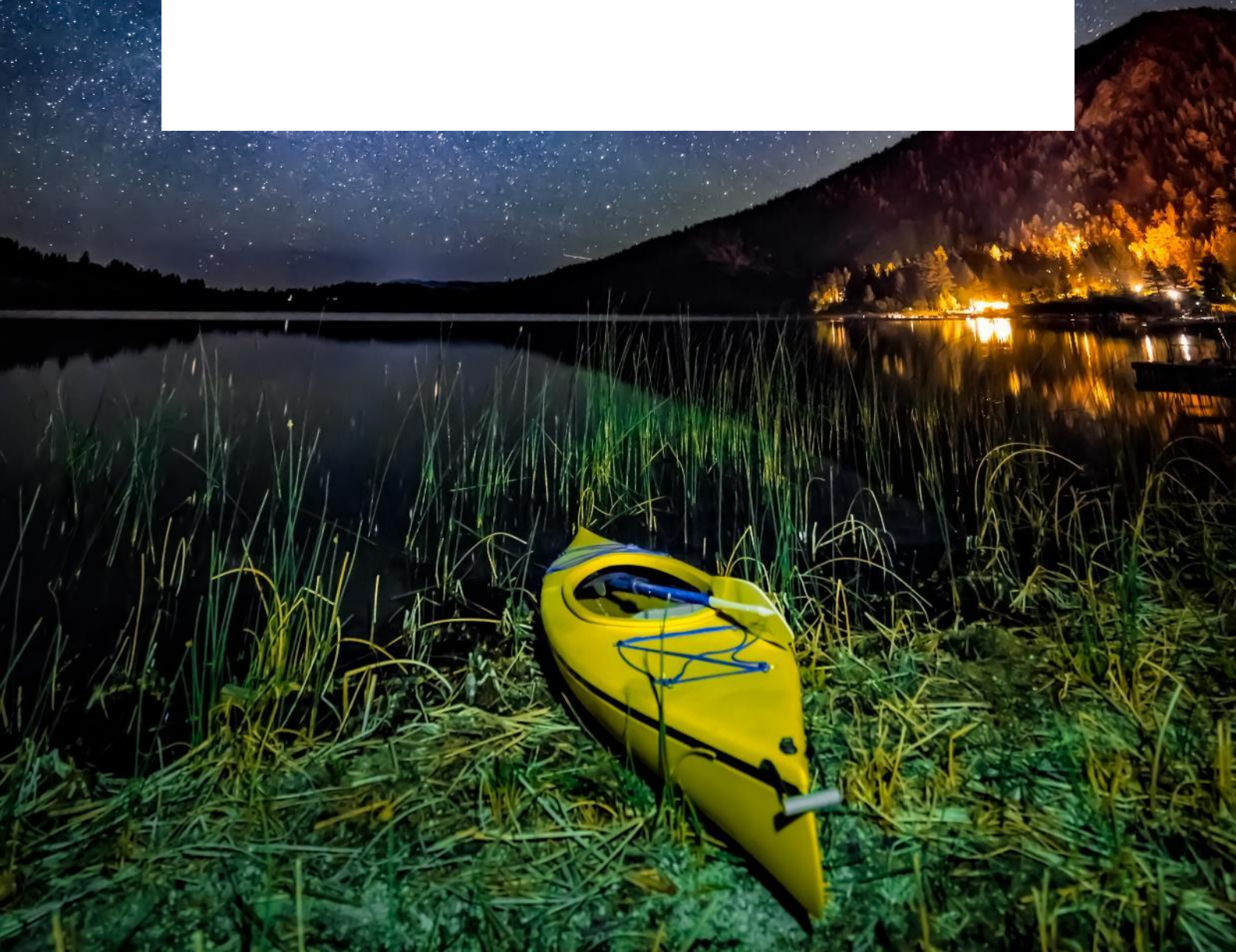
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4.1 Creating Unique Dark Sky Ecotourism Products, Services and Regions

So far in this guide, we have explored and presented why dark sky ecotourism is a relevant and current tourism sustainable and regenerative tourism trend. In this section, we begin to explore what exactly dark sky ecotourism looks like on the ground and in the sky!

We have conducted research (desk and field) in our partner countries of Denmark, Iceland, Ireland, Italy and Portugal to see what savvy tourism businesses, entrepreneurs and communities have already spotted the potential of dark sky ecotourism to develop innovative dark sky and/or ecotourism products, services and regions. Here after we present our findings in short one page summaries. From glamping under the stars in Ireland, to night nature festivals in Portugal, night time floatation experiences in Iceland to sleeping in a bubble room in Italy and stump lighting in Denmark – there is much to immerse in. Before we begin those explorations, let's set the scene for why our partner countries are well positioned for dark sky ecotourism.



ICELAND: The extreme dark of the Icelandic winter has a few perks. Between September and April, people in Iceland are treated to a magnificent natural display: the phenomenon of aurora borealis, or what we commonly call the Northern Lights. We will explore the lucrative Northern Lights tourism market in the pages which follow but we will also come to learn of some emerging dark sky ecotourism experiences and accommodation.



In **PORTUGAL**, sunny days give way to clear nights that invite stargazing, as well as other nocturnal activities, associated with the country's rich natural and cultural heritage. For those who love open-air evenings, there are many and varied proposals, from North to South, on the mainland and on the islands.



ITALY has 54 UNESCO heritage sites, the most in the world and many would agree that ecotourism is needed in the country to preserve these locations for future generations. About 40% of Italy's land is mountainous, making it a great place for dark sky tourism as the mountains offer a great light pollution shield.



Like much of Europe, **IRELAND** has marvellous potential for preserving the beauty of the night sky. Already home to several International Dark Sky Parks, word of the potential of dark sky tourism is spreading. Along side this, eco and sustainable tourism movements paving the way for new tourism products and services.



DENMARK is home to some of the best stargazing locations and it is also widely recognised as one of the most climate-friendly countries in the world. Sustainability is taken very seriously in Denmark and sustainable ecotourism is a top priority for national tourism promoters like [Visit Denmark](#).

4.2 Spotlight on Dark Sky Ecotourism Experiences

Dark Sky Tourism Experiences tend to take places in remote areas with a clear view of the night sky, away from artificial light pollution. This could include stargazing, watching an eclipse, watching the Northern or Southern Lights, visiting observatories, attending guided tours, stargazing sessions, and astronomy tours.

Our idea is that Dark Sky experiences can be complemented by night time ecotourism activities such as night safaris, nocturnal nature walks and more.

Nocturnal Nature Walks are a great way to introduce tourists to the nocturnal creatures that live in your area. Taiga Times offers a 3 hour nighttime walk to Sipoonkorpi National Park

[Nature tour from Helsinki - Nature at Night - Taiga Times](#)





Photo: Ole Malling



Photo: Claus Starup



Photo: Thomas D. Mørkeberg



Photo: Claus Starup

The Observatory in Brorfelde, Denmark

During the space race, the Brorfelde Observatory was built as part of the University of Copenhagen's observatory department. As astronomical observations became increasingly difficult due to Copenhagen's increasingly night-lit streets and buildings, astronomers at the university began to look for a location outside of the city where the night sky would remain as brilliant as it had always been. They discovered a strange Ice Age landscape with geology that would turn out to be extraordinary in and of itself at Brorfelde. Between 1953 and 1964, four telescope domes, an extensive workshop, and a small village housing the numerous technicians, astronomers, and assistant staff who would make up Brorfelde's starry-eyed community were added to the glacier-carved hills.

Since 2016, the Observatory has hosted school trips, workshops and meetings, team-building overnight stays, and a wide range of talks and stargazing events, with the goal of combining learning and fun for people of all ages through activities such as shooting water rockets into the sky and exploring the night through Denmark's largest telescope.

The observatory complex and the surrounding 40 hectares of land have been protected as the only places in Denmark to protect the area's deep natural darkness from any light pollution. As a result, there is no other place like it, where the trinity of the observatory, the dark, and the unspoiled wilderness provides a wealth of experiences not found anywhere else.

Key Takeaways: The Brorfelde Observatory has contributed significant discoveries and exploration tools to our understanding of the rest of the universe. The trajectory of the Apollo 11 flight, which famously enabled man's first step on the moon in 1969, was calculated using data from Brorfelde's Meridian Telescope. The observatory fostered a unique set of expertise, combining engineering know-how and research ability, and Brorfelde's astronomers discovered a string of asteroids, resulting in celestial bodies like 'Holbaek,' 'Brorfelde,' and even 'Ceciliejulie.' Their massive Discovery Telescope and Dome, built on-site in the 1960s, remains Denmark's largest telescope and one of the most popular attractions. In addition to its permanent facilities and ongoing exhibitions, Brorfelde hosts a variety of events and talks throughout the year, including lectures by leading scientists on topics ranging from space to geology, Thursday stargazing nights, and tours of the observatory and landscape.

[Observatoriet - Danmarks naturvilde opdagelsescenter](#)



Dark Sky Visitor Centre, Island of Nyord, Denmark

Møn and Nyord have been designated as Scandinavia's first International Dark Sky Park and Dark Sky community, where thousands of stars and astronomic phenomena can be experienced. Thus, a dark sky visitor center would highlight the benefits of dark to visitors the local community alike.

In the last 40 years, light pollution has increased significantly due to the remarkable amount of artificial lighting in the cities, which means that the natural darkness and the starry sky has become a rare sight. Dark Sky is essential in the understanding of the universe and human existence and is crucial for the environment, human health and the ecosystems because of the negative effect of light pollution on the circadian rhythm of both humans, animals and plants.

Many people are not aware of the phenomena of Dark Sky and the importance it has on people and the ecosystems on which we rely. The vision of this project is to establish a spiritual connection between the human and the universe through the architecture because it for decades has been affected by the increased light pollution in the metropolis.

The final design proposal is based on a combination of visible y-shaped columns that due to their form direct the eyes towards the sky. Thus the construction will be the element of staging the phenomenon Dark Sky and establishing the connection between the human and the starry sky through the skylights 6 7 defined between the construction elements.

Key Takeaways: The careful design of the center, taking inspiration from the physical world and traditional Scandinavian building practices, guides visitors sight and other senses to feel truly immersed in the landscape. Minimal lighting and noise reduction within the center guide their gaze to the night sky. In our busy lives, it's not just the light pollution that disconnects us from the atmosphere, but rather there is a spiritual disconnect.

The successful implementation of this project will provide the local communities and visitors who visit the Island of Nyord with a unique experience that will connect them to the local environment and reestablish the deep historical and spiritual connection we have with the atmosphere.

[Find more information in the report link here](#)



Photo: www.stablestop.is



Photo: www.stablestop.is



Photo: www.stablestop.is



Stable Stop in Hörgárdalur, Iceland

Stable Stop is a family run horse tour company that also has Airbnb on the land that they live and farm on. They have exceptional darkness quality, so they wanted to branch out into Dark Sky Ecotourism but were not sure how to do it and how to make sure that they were an ecotourism company.

The owner found it very useful to go through the process of becoming an Ecotourism company, as it gave them a greater overview of the company's operations and the family's future ambitions for the company. The process showed that the company was mostly sustainable and what was missing was something that the owner thought they could change in a relatively easy way.

The start-up costs involved in Dark Sky innovation can be relatively low, since they use free resources (like the dark sky and natural environment) and resources that the company already has, in this case the land and its history, horses and human resources.

Key Takeaways: In 2020 Lignan, obtained the Starlight Stellar Park certification, issued by the Starlight Foundation of the Instituto de Astrofísica de Canarias. To date, it is the only Italian area to have obtained this certification.

The Starlight Stellar Park certification is recognized by UNESCO, the United Nations Agency for Education, Science and Culture known for identifying World Heritage Sites, as part of the international Starlight Initiative for the defense of the night sky. It is also recognized by the world tourism organization UNWTO and by the IAU, the association that brings together about 14,000 professional astronomers from 107 different countries.

<https://stablestop.is/>



Photo: <https://www.northsailing.is/is/ferd/kvoldsigling-opal-reykjavik/>



Photo: <https://www.northsailing.is/is/um-nordursiglingu/>



Photo: <https://www.northsailing.is/is/ferd/kvoldsigling-opal-reykjavik/>

North sailing, Iceland

North sailing is a family-owned whale watching company which has its home port in Húsavík. North sailing has received many awards for its pioneering work in eco-friendly tourism and has attracted worldwide attention for its innovation and preservation of the Nordic cultural heritage. Among the awards they have gotten are the Environmental Award from the Icelandic Tourist Board and the World Responsible Tourism Silver Awards for the best innovation for Carbon Reduction. North sailing is a certified Responsible Whale Watching Operator by the World Cetacean Alliance. The company laid the foundation for Húsavík's reputation as the whale watching capital of Europe.

North sailing used their resources as a whale watching company and their access to the dark sky to branch out into Dark Sky Ecotourism.

They offer Northern Lights cruises - where guests can sail with Iceland's first and only electric yacht.

They sail away from city lights and take tourists around Skjálfandi bay in search of dark, clear skies and the mystical Northern Lights.

During the sailing, their experienced crew informs the guests about the northern lights and the area.

Key Takeaways: Branching out into Dark Sky Ecotourism increased the diversity of the tourism business and adds a new target group for it. This also has a positive effect on the destination due to synergy.

An Ecotourism company that already has experiences with and knowledge with applying ecotourism principle to their existing tours can more easily pick up Dark Sky Ecotourism.

A company that is in an area with good access to quality dark skies can often branch out into Dark Sky Ecotourism using the knowledge and resources that they already have.

<https://www.northsailing.is/>



Photo: Irish Times

Lough Hyne Night Kayaking

Lough Hyne is a uniquely beautiful salt water lake, the only one of its kind in Europe, and Ireland's first marine reserve since 1981.

It is a safe and serene location and it is home to a unique dark sky ecotourism experience - night kayaking tours with bioluminescence usually visible between the months of April – October.

Bio luminescence is a type of chemiluminescence, which is the term used for a chemical reaction where light is produced. What does it mean? At night, Lough Hyne glows!!



The night kayaking trip provides a unique experience of being on the water from dusk into darkness. One of the tourism providers offering this experience is Atlantic Sea Kayaking who tell:

“There is always something to make you gasp on this trip, the sparkle of bioluminescence, the sounds of seabirds coming in to roost, the sunset, the rising moon, the aromas of honeysuckle and gorse on the breeze, the panoply of stars overhead, and the deep, dark peace and serenity of night.

It is a trip which feeds body and soul.”

Watch video -

<https://www.youtube.com/watch?v=IhZMNkTL8f0>



Photo: [Stefan Schnebelt](#)

Key Takeaways: Lough Hyne is on the extreme south-west corner of Ireland, five miles from Skibbereen. It is a great example of what can be preserved and maintained with conservation and a programme of education. It is arguably the most studied slice of marine environment in the world, a process started in the 1880s. The sea life in Lough Hyne represents 75% of the creatures found in Ireland. It is home to 72 species of fish, including cod, monkfish, and mackerel. Sixty-five percent of all species Irish seaweeds are found here. As well as night kayaking, there is also a range of other tourism experience attached to Lough Hyne like the The Lough Hyne Interpretive Centre is located at the [Skibbereen Heritage Centre](#) in the town of Skibbereen.

www.atlanticseakayaking.com/booking/lough-hyne-night-kayaking/



Lough Boora Discovery Park at Night (Photo Credit: [Adrian Hendroff](#))

Lough Boora Discovery Centre, Ireland

Lough Boora Discovery Park is a popular visitor amenity in the midlands of Ireland, located in County Offaly. The park is a lowland peat bog, surrounded by small villages and agricultural land. There is likely high development potential for dark skies ecotourism in the region due to the sparse population of the region, rich ecology and good tourism infrastructure. The park is also interesting from regenerative tourism perspective due to its history.

Prior to becoming a tourist amenity, Lough Boora was intensively harvested for peat production since the 1950s by Ireland's state-owned peat harvesting authority, Bord na Móna. Until recent decades Ireland relied extensively on peat (turf) for both electricity generation and home heating. Peat harvesting is hugely damaging to lowland bogs, with industrial scale drainage completely changing the landscape and harming local ecology.

The Irish government has phased out peat production from the site in recent decades, ceasing at the last part of the site in 2019.

In the 1990s work commenced to develop an amenity at the site, with a Visitor Centre was officially opened at Boora in 2014. This was driven by community needs, site availability and Bord na Móna, who had both social and legal obligations to restore the site.

The aim of the project was to develop a tourist and leisure amenity, while repairing and restoring a sensitive and damaged site with high ecological value. This would provide a valuable amenity to locals for a region in transition.

Find more info [here](#)

Key Takeaways: The transformation and improvement of the environment has been very positive and Lough Boora Discovery Park has now moved from being an intensively harvested peat production site to a fully functioning visitor amenity. The park is now popular with many different tourism segments, including walkers, cyclists, photographers, families, boaters and bird watchers. The park is full of industrial heritage, such as old peat harvesting equipment and trains used to transport turf (See attached photo). The key lesson to consider from the case study is that with the right government planning and supports, it is possible for environmentally degraded sites to commence a journey of restoration, utilising tourism as a vehicle for change.



Photo Credit

Research and Conservation and Tours to see Basking Sharks, Ireland

Ireland is home to between 15-20% of the world's basking sharks. As the second largest fish in the World, they can grow up to 8-metres in length, with their mouth opening up to 1-metre wide to feed on plankton near the surface. Basking sharks are regularly encountered around Irish coasts with many sightings by adventure tourists, including kayakers, surfers, and deep-sea anglers. They are a popular species to photograph for social media output, with many tourists publishing photographs and videos of sharks, particularly near their kayaks, which have gone viral in recent years. In 2022, they became a protected species under the Irish Wildlife Act.

There is current work ongoing in Ireland from a number of organisations to improve scientific knowledge, public awareness and policy protection around the basking shark habitat. The most vocal group is the Irish Basking Shark Group (IBSG); an amalgamation of research studies based on the island of Ireland. The group's aim is to create basking shark research and support conservation so they can determine past, present and future population trends, identifying factors that affect their presence in certain locations, and what their critical habitats or "hot spots" are. In carrying out these studies they hope to promote their legal protection in Irish waters.

Tourism businesses have started to capitalise on basking shark season which depending on sea water temperatures tends to start toward the end of March each year. [Blasket Islands Eco Marine Tours](#) in County Kerry offer day trips with a guest wildlife guide and marine biologist on board.

Key Takeaways: The work conducted to date is beginning to show some success. In Spring 2022, Ireland's basking shark has been given the status of a "protected wild animal" under the Wildlife Act. Additionally, a collaborative code of conduct for the eco-tourism and wildlife watching industry in Ireland is in development to support conservation and improve research and information about habitat. There is excellent potential to combine the ecotourism potential of viewing basking sharks with dark skies products, due primarily to the low levels of light pollution along Ireland's west coast with the relatively easy access to viewing basking sharks.

Watch: [Basking Sharks in Clare RTE](#)
Find out more at [IBSG](#)

NOITE DAS CRIATURAS DAS TREVAS

2022



© criaturasdastrevas



© ADCMoura



© ADCMoura [This Photo](#) [CC BY-NC](#)

The Night of The Creatures of Darkness, Portugal

Revealing the true importance and beauty of bats, frogs, toads, salamanders, spiders, moths, owls, owls and mice to as many people as possible is the aim of the Nights of the Creatures of Darkness, which have been held on Halloween night since 2012. In the words of the initial organiser, "These are animals very badly regarded by the population, suffering because of ancient myths that they are dangerous. Any witch recipe has bat eyes or salamander paws." Bats, spiders and frogs have entered this imaginary and lend themselves to misconceptions, which make their conservation difficult.

The annual "In search of the creatures of darkness" initiative began in 2012, as part of the "Ponds with life" campaign, which encourages citizens to discover, value and investigate ponds and their biodiversity.

It is a set of ecotourism/ education activities that take advantage of Halloween Night to introduce the public to the nocturnal animals that are popularly associated to myths and superstitions.

Mostly, it happens as nocturnal walks, guided by biologists and other specialists, aimed at the general public, during which you learn about nocturnal animals and about how important they are to the ecosystem. These activities often include cultural moments.

They are organised on the basis of local partnerships, notably with non-governmental organisations and municipalities, throughout the country.

Key Takeaways: Each year, more localities become associated with this event. In 2022, there were 15 municipalities in which activities linked to the initiative "in search of the creatures of darkness" were developed - in some cases, in various locations and editions throughout Halloween week - from the north to the south of the Portuguese mainland and on the islands, involving dozens of researchers and thousands of participants.

In ten years, it is estimated that more than 10 thousand people may have taken part in these activities, in a fun way, and that they were certainly made aware of the importance of contributing to the conservation of nocturnal animals and their habitats.

[Noite das Criaturas das Trevas](#) | [Facebook](#)



© Picomeup

Overnight climb to Pico Mountain, Portugal

Pico Mountain, on the Azores island of the same name, is the highest mountain in Portugal, at 2351 m high. Its trail consists of an ascent to its summit, over a volcanic cone, starting and finishing at Casa da Montanha, at an altitude of about 1200 m. It is about 3.8 km long and has a gradient of 1150 m. It is an ascent and, above all, a descent, both lasting an average of 3 to 4 hours, physically very demanding and potentially dangerous. But the reward can be extraordinary, with a privileged view over the islands of the central group and the night sky.

The Mountain is a Nature Reserve whose geological structures, fauna and flora are of high conservation value.

Pico Mountain has a set of relevant natural values that led to its classification as an integral reserve in 1972, being one of the oldest protected areas in the country. The need to preserve these values and the growing tourist pressure led to the creation, in 2018, of regulations on interventions and the control of access by visitors, also safeguarding their safety. The trail was marked, support infrastructures created, criteria for guides and local tourism companies established and the daily number of visitors limited.

The visit requires prior registration and it is possible to make the climb with an overnight stay in a tent on the volcanic cone for a daily maximum of 32 people.

Information and reservations:
<https://montanhapico.azores.gov.pt/?lang=en>

Key Takeaways: Pico Island is one of the islands that has contributed most to the significant growth in demand for tourism in the Azores, with Pico Mountain as one of its main attractions.

The Azores archipelago has won the most important tourism awards worldwide in recent years, particularly in the areas of landscape and nature. It is the first archipelago in the world to be certified for sustainable tourism by Earthcheck (GSTC-Accredited program for destinations) and where an in-depth sustainability plan is being implemented with wide participation, including measures to reduce light pollution, namely for the protection of biodiversity.

By 2022, around 20,000 people are expected to climb Pico Mountain.

4.3 Spotlight on Dark Sky Ecotourism Accommodation

Dark Sky Ecotourism Accommodation offers increased accessibility to different landscapes but in harmony with the natural environment. Dark Sky Ecotourism accommodation could be facilitated by a stay in a nature accommodation, such as a yurt, connecting with the local culture, specific stargazing hotels, or even dedicated cruises.

The Finn Lough Forest Bubble Domes feature 180° transparent walls allowing visitors to truly immerse themselves in the beauty and tranquility of nature. They can escape the noise of the outside world and enjoy stargazing in comfort for in their own special bubble.

[FinnLough - Bubble Domes](#)





Hotel Sóti Lodge, Iceland



Photo: <https://www.arcticcoastway.is/en/places-to-stay/soti-lodge>

Sóti Lodge is a premium country hotel in Fljót, the heart of the Troll peninsula in North Iceland. The company places a high emphasis on comfort, sustainability and responsible tourism. They offer cozy lodging in the heart of Iceland's adventure zone, half-board based on locally sourced ingredients. Sóti Lodge features an outdoor swimming pool, garden, a shared lounge and terrace, and stunning views of the magnificent surroundings, from sea to summit.



Photo: <https://www.sotissummits.is/en/article/as-winter-comes/>

As the company is already working on sustainability and responsible tourism they only needed to find a way to produce a Dark Sky tourism product to be able to offer tourists a Dark Sky Ecotourism experience. The company did this by offering a relaxing and renourishing flotation experience in their outdoor swimming pool, Barðslaug.

Guests can choose between communal flotation session or private flotation therapy in the warm pool water.

Both flotation sessions can be scheduled after dark - as to enjoy looking up at the dark sky while floating – being one with nature and taking in the beauty of the moon, stars or even the Northern Lights.



Photo: <https://www.sotissummits.is/en/book-flotation-experiences-in-bardslaug/>

Companies that are already Ecotourism companies can use the two free resources that Dark Sky Tourism is based on – the dark sky and nature – to add Dark Sky Ecotourism products to their offerings.

In this case, by using their outdoor swimming pool, Barðalaug, as the focal point for enjoying the dark skies by offering a communal or private floating session.

To find out more visit:
<https://www.sotissummits.is/>



Royal Valentia Hotel, International Dark Sky Reserve, Co. Kerry, Ireland

Co Kerry, located in the South-West of Ireland has many popular tourist attractions. Famous for its beautiful scenery, and located on the long-distance driving route 'The Wild Atlantic Way', the county has often reinvented its appeal to domestic and international tourists throughout the decades, attracting nature and film buffs, golf enthusiasts, genealogy tourists and those seeking ceoil agus craic (music and fun!).



The South-West of Co Kerry is one of only three gold tier International Dark Sky Reserves alongside The Grand Canyon and African Savannah.

Kerry International Dark Sky Reserve is located on the Iveragh Peninsula, and incorporates c700sq km of territory. Its location between the Kerry Mountains and the Atlantic Ocean provides some natural protection against light pollution.

Development of a new tourism product, such as dark sky ecotourism accommodation, does not need to involve significant capital investment. Sometimes it's about taking advantage of resources you already have. For accommodation providers in Co. Kerry, and those involved with outdoor activities, the dark sky reserve provided an opportunity to attract visitors interested in the dark sky potential of the region.



The Royal Valentia Hotel is an example of one of the local accommodation providers benefitting from the beauty of the pristine night sky. The hotel offers a dark sky package which runs on selected dates throughout October to March includes:

- 3 nights Bed & Breakfast - Friday to Monday
- Guided bus tour of Valentia Island
- Complimentary lunch for two following bus tour
- An Introduction to Astronomy & Kerry's 'International Dark Sky Reserve'

The hotel advertises that guests will see the beautiful band of the Milky Way, the Andromeda Galaxy, star clusters and nebulae with their bare eyes (weather permitting!).



Photo: <https://www.thegretaescape.com/>

Bubble room accommodation, Biccari, Italy

Puglia is a region located in the south of Italy whose main tourist product is bathing (it has almost 900 km of coastline). In the north of the Region there is the only mountainous area. These are gentle hills (maximum height 1053 meters above sea level), characterized by woods, paths, high-altitude pastures and wetlands, such as lakes and water meadows. This area, called Monti Dauni, is the most authentic but the least touristic of the region and has a gap in terms of economic development, as well as being subject to constant demographic decline. Having to compete with more famous tourist areas, better organized and structured, the aim was to create a differentiated tourist offer, connected to the naturalistic value of the territory and with a strong communicative impact.

A Community Cooperative was created in the village of Biccari. It is a project characterized by strong social innovation and based on sharing: citizens-members identify needs together, develop ideas and build a response path consistent with the resources available in the area. Within the activities carried out by the cooperative there is the creation of the bubble room: a mini pop up house, temporary accommodation immersed in nature (it is located in a wood), characterized by transparent walls and ceilings to feel completely immersed in nature and allow guests watching the starry sky at night. This particular accommodation proposal, which embodies the value of a tourist experience in its entirety, is associated with tree houses for glamping and the largest adventure park in the region with acrobatic courses suspended between the branches of the trees.

Key Takeaways: The bubble room is therefore part of a series of actions developed by the municipality of Biccari to enhance its potential in nature tourism.

In this case, no activities have been developed that can be carried out at night, not even in the context of observing the starry sky, even if sleeping in the Bubble room certainly offers an enchanting view of the sky.

There is a problem with the offer:

- its seasonality, due to atmospheric conditions and temperatures in the cold months

[La Bubble Room a Biccari sul tetto della Puglia \(coopbiccari.it\)](http://coopbiccari.it)



Ripalte Resort, Isola d'Elba, Italy

Tenuta delle ripalte is a resort surrounded by nature on the Island of Elba. It is not located in the immediate vicinity of the beaches, so the owners have associated over time with the essential services of hospitality experiences and activities related to the location and characteristics of the place where the resort is located. The estate, thanks to its position on an island and far from inhabited centers and main beaches, enjoys a crystal clear night vision of the sky. The experience of the starry sky is indicated as an added value of the Estate already on the home page of its website ("A place far from chaos and close to the sky").

Photo: Fabrizio Marra



Differentiation of services for the interception of specific targets:

- various accommodation options (1 hotels, 16 villas, 1 glamping sites, 6 farms)
- differentiation of the gastronomic offer (5 different restaurants / bars with various offers)
- activities in nature (biking, horse riding, yoga, diving, excursions, etc ...)
- private beach
- sailing trips
- wine experiences
- wedding organization
- and of course astronomical tourism

Photo: <https://www.tenutadelleripalte.it/>



Key Takeaways: The result is a luxury tourist offer (not opulent, if anything sophisticated).

In fact, the resort does not stand out for the particular beauty of its structures, which could be intercepted in many other places in Italy, but for the beauty of the nature that surrounds it and for the wide range of entertainment options connected to it available.

Perhaps the proposal could be expanded with other sports activities in nature and by creating a place dedicated to stargazing (fancy place of course!)



Photo: [Parque de Natureza de Noudar](#)

Noudar Nature Park, Alentejo, Portugal

The Noudar Nature Park is located near the town of Barrancos (Alentejo, Portugal). The path from the entrance of the Park to Noudar castle crosses an extensive area of Holm oak forest which ends with a majestic view of the confluence of two rivers. Walking along old tracks, you will discover other stories, the bottoms of valleys where water-mills rest, wild woods on slopes that slide down to the rivers, rocky ridges that rise above the whole landscape. The cork oak forest, the pastures, the olive groves, the grazing with cows and the black pig, are the common signs of the neighbouring estates of this region. But here, a more abrupt and rocky relief has protected enclaves of vegetation where holm-oaks and dense woods remain, where the light enters with difficulty, unique redoubts in a landscape much altered by man. In Noudar life appears in a wild state of absolute purity.

Noudar Nature Park abides by a principle: the use of this area helps to promote conservation and recreate the Farm's agriculture, according to the region's traditional practices and at the same time promoting ecotourism and respect for Nature.

The recovery and adaptation of the Monte da Coitadinha's original architecture allows the hosting of visitors and helps to promote the Noudar experience by providing all the necessary facilities for exploring the area, including lodging, restaurant service and activities.

In this earthly space of refuge and isolation, one celebrates a way of life that is opposed to the bustle of city life. Tranquility, communion with Nature and people, silence and contemplation – also of the night sky! - are prized.

Mediterranean gastronomy and local production are provided and invite people to wander around in a well-preserved and isolated territory.

Key Takeaways: Born from a commitment to mitigate the environmental costs of the construction of the Alqueva dam, the Noudar Nature Park represents an excellent example of how to implement a tourism initiative in which the enhancement of historical and built heritage, the preservation of traditional agricultural and forest management practices and the conservation of biodiversity can go hand in hand.

A multifunctional development strategy that includes the provision of equipment and activities (workshops, festive events) linked to stargazing and the enjoyment of the dark sky and the nocturnal biodiversity. The Noudar Nature Park is member of the Dark Sky Alqueva Route.

<http://www.parquenoudar.com/en/>

4.4 Spotlight on Dark Sky Parks and Regions

Several bodies offer regions dark sky designation and certification.



INTERNATIONAL DARK-SKY ASSOCIATION

The International Dark-Sky Association offers certification to areas to be naturally dark at night and free of light pollution, and therefore some of the best places in the world to view the beauty of the night sky including our own galaxy, the Milky Way.

Find out more: www.darksky.org



The Starlight Foundation has created a certification system whereby those areas that have excellent sky quality and represent an example of protection and conservation are accredited. Starlight is an integrated action of the United Nations Educational, Scientific and Cultural Organization (UNESCO) and is supported by the International Astronomical Union (IAU) and by the World Tourism Organization (UNWTO), emerged from the IAC.

Find out more: <https://en.fundacionstarlight.org>



MAYO INTERNATIONAL DARK SKY PARK



Møn and Nyord Dark Sky Park, Denmark

Dark Sky has been a growing area in Denmark, with many tourism organisations beginning to utilise the natural beauty of night. Møn and Nyord are two islands in the Zealand Region of south-eastern Denmark, comprising 86 square miles of land area. The much larger island of Møn makes up the bulk of this area and is one of the most popular tourist destinations in Denmark. Famous for its white chalk cliffs, Møn offers visitors a slower pace of life compared to the bigger cities of Europe, complete with open countryside, sandy Baltic Sea beaches, and shopping in the market town of Stege.

[Photo Source: Vordingborg Municipality](#)

In 2014, residents of Møn began an effort to promote the Islands' dark skies as a means of economic development and tourism potential. Being a large, remote area, bringing in tourists has been extremely beneficial to the communities. However, with tourism comes an influx of people, who need accommodation, food and entertainment. Therefore, the light pollution, waste pollution and destruction of the natural landscape was a big risk for the regions.

This culminated in a joint effort between Møn and Nyord for IDA recognition as both an International Dark Sky Community and an International Dark Sky Park. The reasoning for this approach is that it results in better protection of current night-time conditions in both the developed and wilderness areas of both islands.

[Photo Source: Anders Brinckmeyer](#)

Key Takeaways: The outcome of Møn and Nyord becoming an International Dark Sky Community and an International Dark Sky Park, has seen a whole host of tourism companies adding the regions to their tours. For example, Geocenter Møns Klint and Dark Sky Guide Møn have established dark sky experience tours, focused on star gazing, nature walks and camping. This has increased tourism within the regions in an environmentally safe way, with little destruction to the natural beauty of the areas.

To find out more visit [South Coast of Denmark](#)



Wadden Sea, North Sea, Europe

Nocturnal darkness is one of the core characteristics in the Dutch, German and Danish Wadden Region. Since 2009, the Wadden Sea has been designated as a UNESCO natural World Heritage Site where natural processes proceed largely undisturbed. Especially in relation to biodiversity and ecology, darkness can contribute to the Protection of the UNESCO Outstanding Universal Value.

During the 13th Trilateral Governmental Conference on the Protection of the Wadden Sea in Leeuwarden in 2018, the ministerial statement recognised the potential impact of light emissions on the Wadden region and importance of darkness for ecosystems and people.



Mando Island, Denmark: [Source](#)



Existing Dark Sky Parks in the Wadden Sea Region:

- Dark Sky Park – [Lauwersoog](#)
- Dark Sky Park – [Terschelling](#)
- Sterneneinsel - [Pellworm](#)
- Sterneneinsel – [Spiekeroog](#)

Other projects in process:

- [PRW - Experience the darkness](#)
- [PRW - Trilateral programme DARK SKY](#)
- [Reduction of light emission – Wadden Agenda 2.0](#)
- [Dark Sky process Mandø](#)
- [Nationalparkverwaltung Niedersachsen](#)

The Wadden Sea Stretches along the coasts of Denmark, Germany and the Netherlands. ([Photo Source](#))



Dark Skies Along the Wadden Sea ([Photo Source](#))

Key Takeaways: In the project workshop, new possibilities for sustainable experiences of Dark Sky were discussed. The steps to follow are to train guides in how to safely and effectively host dark sky activities, and finally plan activities and pop-up events to get out and experience the darkness and learn about the Wadden Sea Heritage Site.

On a clear night in the Wadden Region you can see around 3500 stars. Experiencing darkness and a bright starry sky creates opportunities for new sustainable tourism products. This provides a unique selling point and can contribute to further development of the local economy.

[Working Together on Dark Sky in the Wadden Region](#)



Mayo International Dark Sky Park, Ireland

Ballycroy / Wild Nephin was designated as a national park in 1998. Situated around the Nephin Mountains, Ballycroy is an area of low populations, comprised largely of small villages, agricultural land and intact blanket bog. An aim of the International Union for the Conservation of Nature (IUCN) is “To protect natural biodiversity along with its underlying ecological structure and supporting environmental processes, and to promote education and recreation.” This aim was recognised as being a key concern in County Mayo, who established the Friends of Mayo Dark-skies Team.

Source: The Great Western Greenway



Source: The Great Western Greenway

The intervention sought to establish dark sky designation for Wild Nephin/ Ballycroy and to improve local awareness of light pollution in the area. Much lobbying was conducted by the group, with local and public awareness events organised including talks and tours, both in-person and online, information leaflets and web material created, social media pages and information provided to policy makers.

In their application to the International Dark Sky Association, the Mayo International Dark-Sky Park highlighted their intention to “ensure the exceptional quality of the night-time skies in this region are preserved through continuous monitoring and with the support of the local authority and communities”.



Key Takeaways: Mayo is now home to Ireland’s first International Dark Sky Park. This is a significant achievement for the region, which has relatively low levels of tourism, coupled with high dark sky ecotourism potential.

“Mayo Dark Sky Park is a great example of a collaborative project between our communities, National Parks & Wildlife Service, Coillte, GMIT Mayo Campus, Southwest Mayo Development and Mayo County Council. We are very proud of the strong partnership formed between local people and state agencies who worked together on this project. The process of preparing a dark-sky application took over two years to complete from initial research undertaken in 2013.”

More [info](#)

Mayo Dark Sky Park: [Source](#)



Saint Barthelemy Valley, Italy



Vallone di Saint Barthelemy, in the center of the Aosta Valley, is an area of great environmental value, which has developed a form of niche tourism whose experiences are all linked to the enjoyment of nature: hiking, biking, etc. ...

The area, open and sunny all year round, away from sources of light pollution, is ideal for observing the sky.

Photo: <https://www.sportoutdoor24.it/>



Given the environmental context and the presence of a qualitatively good night sky, in 2003 the Astronomical Observatory of the Aosta Valley was inaugurated in Lignan, a mountain hamlet of the Municipality of Nus in the Aosta Valley, at 1650 m.

The structure was created specifically to be used also by schoolchildren and non-professional amateur astronomers. . In addition to the 810 mm main telescope, the Observatory provides astronomy enthusiasts with powerful tools for observing various celestial bodies, while for the less experienced there are guided tours and observations.

Photo: <https://www.centrovalledaosta.it/>



Key takeaways: In 2020 Lignan, obtained the Starlight Stellar Park certification, issued by the Starlight Foundation of the Instituto de Astrofísica de Canarias. To date, it is the only Italian area to have obtained this certification. The Starlight Stellar Park certification is recognized by UNESCO, the United Nations Agency for Education, Science and Culture known for identifying World Heritage Sites, as part of the international Starlight Initiative for the defense of the night sky. It is also recognized by the world tourism organization UNWTO and by the IAU, the association that brings together about 14,000 professional astronomers from 107 different countries.



Dark Sky Alqueva Route, Portugal



© ADCMoura

The region of the Great Lake Alqueva in Alentejo, Portugal is a wonderful place to see the stars, the constellations, the Milky Way and other distant galaxies. The very low rate of light pollution in the municipalities of Alandroal, Reguengos, Monsaraz, Mourão, Barrancos, Portel and Moura, provide the ideal conditions to observe the night sky. It is becoming increasingly uncommon for people throughout Europe to have the privilege of being able to observe the night sky due to the high levels of light pollution. Alqueva is uniquely blessed with both low levels of light pollution, and clear skies that afford them views of the night sky all year round.



© Miguel Claro

The Alqueva region is unique in that it's very rich in cultural and natural heritage. Its megalithic remains provide a link to past civilisations that observed and responded to celestial movements. It is a picturesque small village region that provides visitors with a range of activities to fill their days and nights. Alqueva in Portugal is the first place in the world to be certified by the Starlight Foundation as a "Starlight Tourism Destination".

This certification, awarded by the Starlight Foundation is supported by UNESCO, UNWTO and IAC. Starlight destinations are places with very low light pollution where visitors can enjoy unique and unparalleled opportunities to view the night sky.



© Miguel Claro

Key Takeaways - The Alqueva Dark Sky Route initiative provides a focus for activities, providing opportunities for bird watching, hiking, horse riding, wildlife viewing, canoeing, lakeside dining, activities for children and, of course, stargazing. The route has received several awards, including this year's 2022 World Travel Awards – World's Responsive Tourism Award. Some of the outcomes achieved include the creation of a tourism network comprising hotels, restaurants and activities all designed with stargazing in mind. The infrastructure needed was created consisting of museums and astronomic observatories. Since its implementation, a diverse range of stargazing activities have been implemented, including an annual festival. The success of the region has seen the concept be expanded to other regions throughout Europe.

<https://darkskyalqueva.com/en/>

SECTION 05

Promotion of Dark Sky
Ecotourism across
Europe – policy
spotlight



IN THIS SECTION

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5.1 EU and Global Policy – paving a way for Dark Sky Ecotourism

In recent years, activities, policies and projects related to dark sky tourism have become increasingly popular in Europe. There is also much research outlining this particular sector and/or studying what economic-environmental conditions are required for its implementation.

According to the Food and Agriculture Organization of the United Nations (FAO), 40% of the world economy is based on direct or indirect access to biodiversity, ecosystems and the benefits that nature provides. Many European countries have started to legislate on environmental protection for dark skies by placing limits on light pollution. The various regulations are both important to laugh at the waste and consumption of energy, but also er the protection of flora and fauna. Interesting in the law-making processes is that environmental organisations have played a fundamental and guiding role for the legislator. For example, Italy was one of the first countries to have legislated on the subject at both regional and national level, thanks to the contribution and drive of organisations.

Having national laws regulating light pollution makes it possible to safeguard the environment and thus to be able to implement tourist services related to astrotourism and experiential tourism, with political impacts on communities in socio-economic terms.

The EU GPP criteria for road lighting and traffic signals aim to address the key environmental impacts associated with the design, installation and operation of these systems. For road lighting, the criteria are broadly split into three parts: energy consumption, **light pollution** and durability aspects.

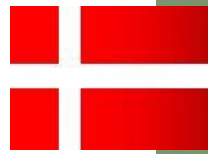
Promoting green and sustainable tourism is part of the EU's commitment to building an economy

based on the European Green Deal. Innovative projects implemented across Europe show how responsible and green tourism can support the recovery of the European economy after the COVID-19 pandemic. This is particularly important in smaller destinations, but rich in natural and cultural deposits. The benefits of tourism must be balanced with the protection of the environment, as tourism has a great impact on natural and cultural resources and on the local population.

The role of tourism in the new European Green Deal was highlighted at the FITUR fair (Madrid). The specialized agency of the United Nations, the World Tourism Organization (UNWTO), has invited tourism ministers from across Europe and representatives of the European Parliament and the European Travel Commission (ETC) to Madrid for a debate on the vital role the tourism sector will carry out in pursuit of ambitious sustainability objectives.

The Green Deal is an integral part of the Commission's strategy to implement the United Nations 2030 Agenda and its Sustainable Development Goals; it is committed to making Europe the first carbon neutral continent by 2050. The tourism sector has an obligation to use its unique power to lead the response to the climate emergency and ensure responsible growth, through the creation of increasingly sustainable tourism products and services.

5.2 POLICY AND REPORT SPOTLIGHT - DENMARK



Denmark is home to some of the best stargazing locations and it is also one of the most climate-friendly countries in the world.

In the pages which follow, we will learn about some Danish tourism policies and key reports that are uniquely positioning Denmark for dark sky ecotourism development.

Policy Spotlight Denmark – Light Pollution and Dark Skies

Denmark may not have the same level of visibility as some other destinations for dark sky tourism, there are still several areas in the country that offer excellent opportunities for stargazing and experiencing the wonder of the night sky.

Located on Northern Europe's Jutland Peninsula and surrounding islands, Denmark can be thought of as both a cultural and geographical bridge between Western Europe and Scandinavia. With regard to dark sky tourism, Denmark is relatively well positioned although it may not have the same level of visibility as some other destinations due to its northern latitude and limited land area. However, there are several areas in Denmark that are known for their relatively low levels of light pollution and good opportunities for stargazing.

Denmark has implemented several policies to reduce light pollution and preserve the dark sky for stargazers. Some of the most notable policies include:

Outdoor Lighting Regulations: In 2012, the Danish government introduced regulations for outdoor lighting to reduce light pollution. These regulations require outdoor lighting fixtures to be shielded and directed downwards, so that they do not emit light upwards into the sky.

Dark Sky Parks and Reserves: Denmark has designated several areas as Dark Sky Parks and Reserves, including the island of Møn and the Wadden Sea National Park. These designations recognize areas that have made significant efforts to reduce light pollution and preserve the natural darkness of the night sky.



Awareness Campaigns: The Danish government has launched several awareness campaigns to educate the public about the effects of light pollution and the importance of preserving the night sky. These campaigns aim to promote responsible outdoor lighting practices and encourage individuals and communities to take action to reduce light pollution.

Energy Efficiency: In addition to reducing light pollution, many of Denmark's lighting policies also aim to increase energy efficiency and reduce greenhouse gas emissions. This includes promoting the use of energy-efficient LED lighting and encouraging the adoption of smart lighting systems that can be controlled and adjusted to minimize light pollution.

Overall, Denmark's light pollution policies demonstrate a strong commitment to preserving the natural darkness of the night sky and creating a more sustainable future for its citizens and the environment.



Danish Island Lighting Design Aims to Reduce Light Pollution

The Island of Møn in Southern Denmark is a certified Dark Sky Community. Now, what is a Dark Sky Community. A Dark Sky Community is a town, city, or community that is exceptionally dedicated to preserving the night sky through various means – such as quality outdoor lighting ordinance, dark sky education, and citizen support of dark skies. The Island of Møn is a famous place for stargazing and is thereby required to maintain extremely low levels of light pollution. And designer Peter Bysted and Danish lighting company Icono have specially designed a light for the island!

The lighting design, called Stump, is a sturdy light designed to illuminate and light up the outside areas of the Island of Møn. The light was specifically designed to combat and reduce light pollution. The lighting design is shaped like a bollard and has an oxidized cast iron body and a transparent cap. When used, the transparent cap contains a warm-toned, low-energy lighting fixture that emits a soft, radiant light.

Throughout the day, the light's stocky and sturdy base casts interesting and playful shadows, and its imposing structure can be used as a stool for people to lean on. So, you can either seek assistance from Stump or gaze at the sunlight reflecting off the design's curvy and organic shape. "Stump's light emission is non-blinding and dedicated to illuminating parks and paths - just enough to ensure safety," Icono explained. As a result, Stump successfully illuminates the space in which it is placed while avoiding light pollution.



Source - <https://www.yankodesign.com/2023/02/06/this-curvy-stumpy-outdoor-lighting-design-aims-to-reduce-light-pollution-on-a-danish-island/>

Danish Nature Policy - Our Shared Nature

The Danish Nature Policy – Our Shared Nature is the first policy in Denmark that is focused on a cohesive and ambitious nature and countryside, with specific initiatives that will create more and better natural habitats – including at sea.

The Danish Government's vision and objective through this policy is that by 2050 Denmark will be a greener country with more diverse nature, and in particular it will be a country in which internationally protected natural areas, forests, parks, marine environments and most important habitats for endangered species will be more coherent. Denmark is dependent on its agricultural and fisheries resources. In line with EU and UN principles and goals, through the 'Our Shared Nature' policy of October 2014, the Danish government intends to:

- ensure national implementation of the EU's regulation on invasive species
- Protect endangered and vulnerable species in line with the new national species management plan and the biodiversity map
- strengthen the protection of wild animals and plants by imposing a ban on using fertilisers and pesticides on protected nature areas (Section 3 protected areas) by amending the Protection of Nature Act
- plant new state-owned forests with the multiple aim of connecting natural habitats, contributing to climate protection, protecting drinking water and creating new and better nature experiences, including forest near urban areas

Concerning marine and sea protection, in 2015 the government presented a programme of initiatives for the sea, based on Denmark's Marine Strategy from 2012. The programme of initiatives contributes to the achievement of a good environmental status in the Danish marine areas. The government launched Natura 2000 plans for public consultation regarding the 97

entirely or partly marine areas by the end of 2015 – including the first Natura 2000 plans for a number of new areas in the North Sea. The plan ensures continuous mapping of reef, bubbling reef and sandbank habitat types within Natura 2000 sites. Restoring a stone reef in the sea or in an inlet system means contributing to improving conditions for animal and plant life on the sea bed. DKK 10 million has been earmarked for the project.

(The Danish government also actively participates in negotiations under the Convention on Biological Diversity regarding the mobilisation of resources.)

The Natura policy also focused on integration of nature protection and biodiversity in climate-adaptation initiatives and in development plans and policies at both national and international levels such as

- conservation of biodiversity and natural resources as reflected in the UN's sustainability targets post 2015.
- continue to make an active contribution to implementation of the Nagoya Protocol on genetic resources and benefits-sharing and ensure rapid and effective national implementation of the rules.
- ensure that overall monitoring of nature and the environment continues to contribute to an overview of developments in nature and biodiversity.

Denmark is very committed to halting biodiversity loss.

Useful links and resources for deeper study - Denmark

A report about light pollution and certification as Dark Sky Thy
[e2b3389d18613f8a4b4641ef94323950.pdf \(hawboerne.dk\)](#)

MonNyord Light Management Plan
[MonNyord_LMP.pdf | Powered by Box](#)

In the Night Light project regional authorities from The Netherlands, Hungary, Spain, Luxemburg, Denmark, Slovenia and Italy join forces to improve their regional policies for the prevention of light pollution, preservation of dark skies and the sustainable exploitation of dark sky places.

[Night Light | Interreg Europe](#)

A blog post on the light pollution in Copenhagen
[Light pollution in Copenhagen – Dejlige Days](#)

5.3 POLICY AND REPORT SPOTLIGHT - ICELAND



Iceland is one of the best places in the world to experience the Northern Lights, it is a country also deeply committed to the principles of ecotourism.

Let's take a look at some key tourism policies and reports that pave for the way for future dark sky ecotourism development in the country.



Policy Spotlight Iceland - Light Pollution and Dark Skies

The Dark Sky National Policy Report and Dalabyggð's master plan to reduce light pollution and enhance dark sky quality in the municipality

The Dark Sky National Policy report was written in 2013 by Alþingi, the Icelandic national parliament. It lays out the current status (in 2013) in regard to dark sky quality (ice. Myrkurgæði) and focuses also on light pollution, especially in and around the capital city of Reykjavík. It lays out why dark skies are important and why we should protect them:

"With the deterioration of the quality of darkness, the public misses out on enjoying the beauty of the night sky, which was a self-evident part of existence on Earth until over half a century ago. Clean drinking water, unpolluted air and prevention of noise pollution are now considered human rights, and are demanded in many parts of the world that life without unnecessary light pollution will be considered part of basic human rights from an environmental perspective." (Mörður Árnason et al, 2013)

With this in mind the report also points out many possibilities to enhance dark sky qualities, e.g. by putting criteria for dark sky quality and reduction of light pollution into national law and thus into planning laws. The Dalabyggð municipality, located in West Iceland, is about 2,421 km² and had 620 inhabitants in January 2021. One of the objectives of Dalabyggð's master plan is to take the quality of darkness into account as a key issue so the residents of Dalabyggð can have the advantage of living in a healthy environment. They aim to approach lighting in a holistic way, preserving the darkness as much as possible while making sure that the lighting guarantees safety of road users, cyclists and pedestrians.

The Dalabyggð master plan sets out criteria for their local plans, it includes:

- Consideration shall be given to darkness quality in the design process.
- Focus on preserving the dark sky in rural areas and in natural areas as much as possible.
- Lighting must be in context with its environment, e.g. attention must be paid to how the municipality appears at night and to the impact of light signs and similar light sources.

The Dalabyggð municipality has decided to redesign a whole residential street with the goals of reducing light pollution and enhancing dark sky quality, with the aforementioned criteria in mind.



Photo: visir.is



Photo: [Source](#)



How can we make sure that Northern Lights and star gazing will still be possible in the future? Iceland

The moon, stars, northern lights, and other celestial phenomena that are only in the dark are considered major natural phenomena. Ensuring the quality of natural darkness is a matter of nature conservation and of much importance so that humans and animals can enjoy the night sky.

Travel agencies in Iceland have seen a surge in tourists coming to see the Northern Lights over the past two decades. The guides use their experience to follow the best quality of darkness and most often take their guests out of inhabited areas to areas with less light pollution. It's not possible to see the northern lights or the starry sky in the capital or without significant light pollution, and the need to go further and further away from it is growing with the rising reach of the corona. If nothing will be done to reduce the growth in light pollution Dark and Auroral travel will become harder to achieve and more expensive.

There is little discussion of lighting and light pollution in Icelandic laws and regulations. There are no provisions in the law, but there are in the building and planning regulations.

In Article 10.4.2 of the Icelandic Building Regulations (nr. 112/2012) there is a provision on requirements for light and lighting, but it states in paragraph 1:

'When designing outdoor lighting, care must be taken to ensure that there is no unnecessary light pollution from the flood lighting of structures. It must be ensured that outdoor lighting is directed to the appropriate area and well-shielded lamps must be used that cast the light down and cause less glare and nighttime glare.'

The quality of darkness in and around settlements has deteriorated significantly in Iceland in recent decades.

As seen in the picture above from Hólar, the effect of one light that is not shielded and casts up can cause a lot of glare. This can affect the experience of gazing up at the majestic Northern Lights and starry sky.

Various local authorities have included provisions to reduce light pollution in their subdivision and master planning laws.

With the cooperation of all stakeholders to reach the important goal of maintaining dark qualities – what a bright starry sky it would be

Useful links and resources for deeper study - Iceland

Dark Skies in Iceland - Report of a working group on quality of darkness and light pollution together with proposals for improvements and further examination:

<https://nattsa.is/wp-content/uploads/2014/09/Myrkur-3-10.pdf>

The Nes Observatory website – the perfect place to learn everything about the dark sky, stars – light pollution and more:

<https://natturumyndir.is/light-pollution/>

An interview with Sævar Helgi Bragason, also known as Stjörnu-Sævar (e. Star-Sævar):

<https://www.visir.is/g/20222306488d/stjornu-sae-var-hvetur-folk-til-ad-horfa-til-himins>

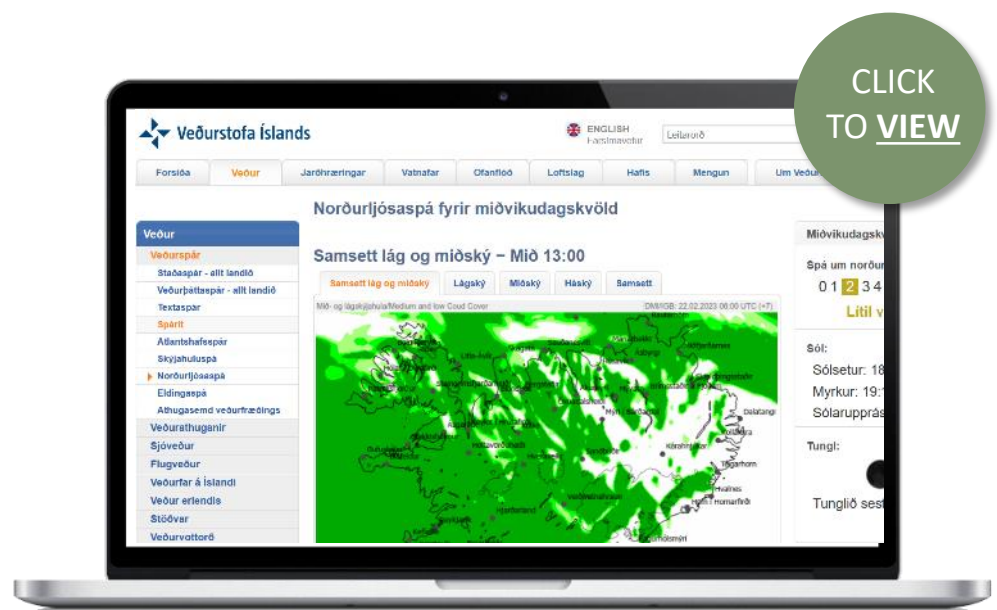
An Icelandic webpage about astronomy:

<https://www.stjornuframedi.is/>

The folklore about the Deacon of Dark river – a ghost story that the dark sky and moon play a big part in: <https://guidetoiceland.is/connect-with-locals/regina/the-deacon-of-dark-river---a-ghost-story>

Northern Lights forecast for Iceland:

<https://www.vedur.is/vedur/spar/nordurljof/>





5.4 POLICY AND REPORT SPOTLIGHT - IRELAND

Ireland is home to three internationally recognized dark sky places. The land of 50 shades of green – much work is ongoing to ensure tourism coexists with nature.

Let's explore some key tourism policy documents and reports from Ireland that are relevant to dark sky ecotourism.

Policy Spotlight Ireland – Light Pollution and Dark Skies

The topic of light pollution and the promotion of dark skies is gaining importance in Ireland with many studies, and reports resulting in new policies and priorities.

Observations on Light Pollution Aspects of the Wicklow CDP 2021-2027 Trinity College Dublin, on behalf of Dark Sky Ireland (darksky.ie), is an interesting study on directions for developing national policies in Ireland to regulate, develop and preserve the island's dark skies. To date, Ireland does not yet have a reference law. In the Irish context there are well-known effects of light pollution such as on moths, bats and birds, but many others, including potential human health effects, have also been noted. Even for cases where the impact of light pollution itself is relatively minor, the concurrent increase in both light level and the shift to blue-rich lighting can combine with the impact of climate change to push species over the brink and hence careful thought needs to be given to the use of light.

The recommendations included in the College's study are as follows:

- 1) Light is not a right but needs to be justified every time, for safety reasons, to emphasise the environment, a careful and targeted study and planning of lighting should therefore be done. Light what is necessary, for the necessary time, with the least amount of light possible'.
- 2) Implementation of an integrated plan for the county to maintain consistency over time and space. Enforcement of lighting regulations allows authorities to reduce the levels and duration of public lighting.
- 3) Installing lighting fixtures and changing existing ones to low CCT, i.e. warmer light, is shown to be less invasive and disturbs people's sleep less.
- 4) Carefully consider the design of the entire lit area when installing new lighting, as existing lighting, e.g. road lighting, may provide sufficient lit level for adjacent footpaths or cycleways, thereby removing the necessity to add additional light which, by its location, will also have an effect of neighbouring hedgerows and/or water courses.
- 5) Careful planning and management of LED billboards, tending to the lighting environment. A reduction in light output or operating hours could be considered.

On 29 March 2021, the Department of Rural and Community Development published a policy entitled 'Rural Development Policy Our Rural Future: This action is listed as Measure 40, which links to the 'Decent Work and Economic Growth' and 'Climate Action' strands of the Sustainable Development Goals. The County Development Plan, should be in line with the actions required by the national strategy. The DRCD captures all the fundamental and unique aspects of Ireland's cultural and environmental heritage and in addition to the leadership provided by the DRCD, it is interesting that the various bodies involved in the strategy include local authorities and other stakeholders.

The Trinity College study focused on the County Wicklow area, and deduces that due to its good conservation status and the protection of its night-time environment, off-season tourism can also be developed. Studies conducted on behalf of the Council show that there are relatively dark rural areas in the county and this, together with the proximity of populated areas, offers opportunities for tourism development. In this regard, mention should be made of the popularity of the annual Star-B-Q organised by Astronomy Ireland in Roundwood, which has been attended by up to 500 people in past years.

The Irish Light Pollution Campaign (ILPAC)

The Irish Light Pollution Campaign (ILPAC) was founded in the early 2000s by Colm O'Brien and Albert White. It became a chapter of the International Dark-sky Association known as Dark Sky Ireland in 2003

In 2009, the ILPAC hosted the 9th European Symposium for the Protection of the Night in Dublin attracting an international delegation. It sought to highlight the many benefits of a dark sky-friendly lighting policy such as:

Energy: Policies promoting dark skies are directly linked to the reduction of energy consumption through the promotion of appropriate and efficient outdoor lighting technologies. These policies should control the types of outdoor lighting that can be installed by various public and private entities, but also determine appropriate lighting levels and light guarantee conditions.

Economics: the implementation of efficient, planned lighting in policy will help public authorities reduce waste and costs.

Ecology: Wildlife is present in urban environments such as cities as well as in the countryside. It is directly influenced by human habitation lighting and has an impact on both urban and rural biodiversity. A reduction in lighting can restore biodiversity and ecology.

Human health: Studies claim that prolonged exposure to artificial light at night has negative effects on human health. Local municipalities can therefore safeguard citizens' health by planning appropriate lighting systems that guarantee safety at the same time.

Culture and heritage: Natural night skies have inspired artists, musicians, writers and philosophers for many years. By protecting our

natural night skies, we maintain links with our culture and heritage and create opportunities for future generations of creative Irish citizens to be inspired by a natural night sky.

Tourism: Experiential tourism is a growing trend and astro tourism is a useful tool for communities and tourism operators to attract new tourists by offering them alternative experiences and services.

Education: The inclusion of dark skies and educational programmes would provide young people with an introduction to astronomy, but also offers the opportunity to expand learning to multidisciplinary topics such as the environment and energy conservation.

The policy proposal also offers tools to the authorities, which are listed non-exhaustively below.

Type and color: Local authorities should give careful consideration to the type of Light-Emitting Diodes (LED) lighting they use and consider the potential impacts that higher temperature blue-rich lighting has on ecology and on human health.

Testing: Testing new street lighting 'in situ' (i.e. after-dark) before new schemes are rolled out in wider areas to ensure that it is the suitable.

Policy: Local authorities should have a policy to control light pollution in their Area/Local Development Plans.

Zones: Local authorities should consider adopting Environmental Lighting Zones into their lighting policy to ensure that the appropriate lighting levels are used in each zone.



Turning policy into practice...

St Patrick's Lighting Project, Newport, Co. Mayo, Ireland

Newport is a village in County Mayo in the west of Ireland. The village has a population of just over 600 people and has been settled since the early 18th century. The major tourism activities in the town are angling and outdoor activities, with cycling becoming increasingly popular in recent years. Two significant pieces of architecture dominate the village; a disused railway viaduct now operating as a greenway, and a prominent Catholic Church located on top of the main hill in the village. A famous stained glass window, by renowned Irish artist [Harry Clare](#), is visible to the rear of the church. As can be seen in the photograph, the church is very brightly lit with strong glare from the lights and a negative impact on the key features of this historic building. This causes excessive amounts of light pollution, strong glare, energy waste and impacts on local biodiversity.

Local action group [Friends of Mayo Dark Skies](#) aims to develop Newport as Ireland's first Dark Sky Friendly Town. The group has called for redesign of the church lighting to improve the aesthetics, reduce waste energy, reduce light pollution and reduce glare. Supported by the [Heritage Council](#), a statutory public body in Ireland and the Department of Rural and Community Development, a project commenced in 2022 to tackle the key issues documented.

The action group has created a series of guidelines, recommendations and good practice examples for citizens and businesses in the town. This was derived through consultation with community and drawing on national and international expertise.

Key takeaways: The transformation and improvement of the church will be very evident on completion of the project in 2023. Work is ongoing on a phased basis and the project forms just one component of a wider vision for the town.

The main outcome for St Patrick's will be lighting that reduces glare and pollution but highlights the key architectural features of the church. The stained glass window at the rear of the church will be lit for limited periods during the darkness to project the beautiful imagery to the ground at the rear of the church. Architectural impressions of the work are available to view on the full Newport Lighting Masterplan [here](#).

Policy Spotlight Ireland – Ecotourism

Ecotourism is a sector which is steadily gaining significant credibility within the tourism industry in Ireland. It is something which the Irish Government is mindful of. The government aims to have a vibrant tourism sector that:

- makes a contribution to employment across the country
- is economically, socially and environmentally sustainable
- helps promote a positive image of Ireland overseas
- is a sector in which people want to work

In the Republic of Ireland, several greenway initiatives have been centrally funded by the Irish government. Ireland's greenways are off-road routes for walkers, cyclists and other non-motorised transport in Ireland, which are often created as rail trails on abandoned sections of the Irish rail network. The Greenways Strategy - [Strategy for the Future Development of National and Regional Greenways](#) was developed to assist in the strategic development of nationally and regionally significant Greenways in appropriate locations constructed to an appropriate standard in order to deliver a quality experience for all Greenways users.

Published in 2009, The Ecotourism Handbook for Ireland was distributed to over 3,000 tourism businesses by Fáilte Ireland at ecotourism awareness seminars. Despite it's age, much of the handbook remains relevant today with practical information and content related to the ecotourism market, how to certify a green business, how to find 'green' funding, and how to market your ecotourism business.

[CLICK
TO VIEW](#)

ecotourism handbook



for Ireland

Useful links and resources for deeper study - Ireland

[Sustainable Tourism in Ireland - Understanding the opportunity](#). This Failte Ireland research identifies future-facing sustainable travel experiences that could help bridge the say-do gap and motivate people to make sustainable trip choices:

[Dark Sky Ireland](#) is a voluntary group working to promote better lighting and protect the Irish dark skies.

[Sustainable Travel Ireland](#) (formerly Ecotourism Ireland) has been training, certifying and driving sustainable tourism in Ireland since 2009.

[Kerry Dark Sky Tourism](#) - information on The Kerry International Dark-Sky Reserve

[Mayo Dark Sky Park](#) - Mayo is now home to Ireland's first [International Dark Sky Park](#), showcasing some of the darkest, most pristine skies in the world.

[Leave No Trace Ireland](#) - Press Release from The Heritage Council – Restoring Ireland's Dark Skies



A night sky with the Milky Way galaxy and a mountain silhouette. The Milky Way is visible as a bright, hazy band of stars stretching across the sky. The background is a deep blue and black, filled with numerous stars. In the bottom right corner, the dark silhouette of a mountain range is visible against the starry sky. A vertical green bar is on the right side of the white text area.

5.5 POLICY AND REPORT SPOTLIGHT - ITALY

About 40% of Italy's land is mountainous, making it a great place for dark sky tourism as the mountains offer a great light pollution shield. Home to 54 UNESCO heritage sites, the most in the world, a great case can be made in Italy for sustainable and regenerative tourism approaches.

Let's take a look at some key policies and reports paving the way for dark sky ecotourism.

Policy Spotlight – Light Pollution and Dark Skies in Italy

Italy was one of the first countries to adopt regulations on light pollution control. The important aspect of these laws, both national and regional, is that they result from joint work with organisations fighting light pollution. Furthermore, they are simpler and easier to implement. Below is a summary of the most important measures.

While much has begun in this area, there is still much to be done and the contribution of actors from the world of associations and science must never cease. The Italian case shows that there has been an impetus in the fight against light pollution, but there are still many gaps and regulatory gaps to be filled.

The laws of the Lazio and Campania regions are along the same lines, but suffer from overly broad limits and greater complexity of implementation and control because the limits are different per type of plant and per location.

On the subject of light pollution and its effects, Italy has created important works such as the atlas of the brightness of the night sky, which has not been fully exploited by the academic world for its research and studies in this field. But similar procedures have been used for example for calibration work with non-governmental organisations.

The most illustrative of these is the Participatory Biometrics project started in 2008 with the intention of encouraging non-professionals to collect data on light pollution as a means of environmental awareness. The project combines the informal aspect of non-experts in the field with the empirical approach, enabling the collection of a wealth of quantitative environmental data, through the use of low-cost instruments called Sky Quality Meters, provided directly to citizens. Measurements are uploaded and collected on a database on the project website with related publications.

In 2011, the system was also extended to the collection of measurement data from fixed stations for continuous monitoring, implementing the technical aspect with the continuous and automatic collection of data, integrating citizen science activities with time series of higher quality light pollution data. On a national level, the project received good media coverage and great recognition through the active participation of citizens. From a research point of view, the project is interesting in that it has acted as a driving force for the initiation of studies on light pollution by experts in Italy in the areas of biometeorology and marine ecology.

The Ente Italiano di Normazione (**the Italian standardisation body**) issued the UNI 10819:1999 standard, updated in March 2021, which prescribes “calculation and verification methods for evaluating the upward dispersal of luminous flux from artificial light sources of lighting systems in outdoor areas”.



Photo: <https://cortinadelicious.it/>

Veneto Region Law, Italy

The brightness of the night sky is given by a natural component (starlight, galactic, ...) and by a much more significant artificial component, caused by the irradiation of light produced by man - street lamps, light towers, spheres, signs, etc. : the artificial component that alters the natural night sky is called light pollution.

The most striking effects produced by light pollution are an increase in the brightness of the night sky and a loss of perception of the universe around us, because artificial light that is more intense than natural "cancels" the stars of the sky. The starry sky, like all the other beauties of nature, is a heritage that must be protected in our interest and in that of our descendants.

The Veneto Region was the first in Italy to issue a specific law on the subject, the Regional Law of 27 June 1997, no. 22 "Regulations for the prevention of light pollution", which prescribed measures for the prevention of light pollution on the regional territory, in order to protect and improve the environment in which people live.

Now this law is superseded by the new Veneto Regional Law No. 17 of 7 August 2009: "New regulations for the containment of light pollution, energy saving in outdoor lighting and for the protection of the environment and the activity carried out by astronomical observatories".

Law no. 17/2009 has as its purpose:

- the reduction of light pollution;
- the reduction of energy consumption;
- the delineation of design criteria for the improvement of luminous quality;
- the protection from light pollution of the scientific research and popularization carried out by astronomical observatories;
- the protection of landscape assets from light pollution;
- safeguarding the vision of the starry sky;
- the dissemination of the issue to the public and the training of competent technicians on the subject.

The law has as its object the public and private lighting systems present throughout the region, both in terms of adaptation of existing systems and in terms of design and construction of new ones.



ASTRONOMITALY

LA RETE DEL TURISMO ASTRONOMICO



Photo: <https://www.astronomitaly.com/>



Photo: <https://www.astronomitaly.com/>



Photo: <https://www.astronomitaly.com/>

Astronomitaly Network of astronomical destinations

The need that the "Astronomitaly" project seeks to respond to concerns the protection of the celestial heritage (identification and conservation of sites with low or no light pollution) and the tourist valorisation of the same. The goal is to create a network of destinations for astronomical tourism, with the identification of the best locations for observing the starry sky and the creation of sustainable tourism initiatives and products. Federturismo - The national federation of the travel and tourism industry of the Confindustria system - in 2015 signed an agreement with Astronomitaly.

Astronomitaly shares:

- 1) creation of the quality mark "The most beautiful skies in Italy", the first astrotourism quality certification of Italian destinations
- 2) certification of the most beautiful skies in Italy, phases:- inspection with evaluation of the quality of the sky, georeferencing, photographic documentation- determination of the presence of the requirements to join the network- determination of the attributable level of certification- entering the destination in the network
- 3) promotion of the "most beautiful skies in Italy" and their (eco-sustainable) tourist products through the dedicated marketplace [www.https://www.astronomitaly.com/](https://www.astronomitaly.com/) and related social channels

Key takeaways: - quality certification (about 40, no one in Puglia)

- network

- tourist platform (website):

<https://www.astronomitaly.com/>

- tourism products:

Astronomical animation (individual and collective);

Tourist Packages;

Routes and itineraries.

Complementary services offered:

Training Courses (For Individuals, Companies, Schools).

The network is still underdeveloped and the tourist products are basic (astronomical observation with a telescope associated with food and wine tastings; weekends with orienteering competitions and night photography sessions).



5.6 POLICY AND REPORT SPOTLIGHT - PORTUGAL

Imagine a place where in many areas, people feel covered by a majestic starry sky all year round. That is Portugal.

In Portugal, much work has been done to promote and protect dark skies and ecotourism. Let's take a look at some key policies and reports.

Policy Spotlight – Dark Skies and Ecotourism in Portugal

Portugal is recognized as a country rich in natural heritage, holder of species of flora and fauna associated with a wide variety of ecosystems, habitats and landscapes, and integrates a very relevant diversity and richness of this heritage in the European continent, the Macaronesian island territories, coastal and littoral environments and oceanic depths of the northeast Atlantic.

The National Strategy for Nature Conservation and Biodiversity for 2030 (ENCNB 2030) is based on the recognition that Portugal's natural heritage contributes decisively to the affirmation of the country internationally and, in this way, contributes to the implementation of a development model based on the valorisation of its territory and its natural values. In the same sense, the XXI Constitutional Government's Programme states that Portugal should position itself at the forefront of the economic valuation of biodiversity and ecosystem services, viewing them as strategic assets essential to territorial, social and intergenerational cohesion.

Having long been a determining factor in the promotion of a differentiated positioning of the country in terms of tourism, the enhancement of that heritage has seen its strategic relevance increase, registering a progressive prioritisation of measures linked namely to the protection of biodiversity and other areas of action raised by the need to adapt to climate change.

The *Tourism Strategy 2027* and the Plan *Turismo +Sustentável 20-23* are examples of that. Measures are established to minimise that impact and promote a growing awareness among the entire tourism community of the need to change behaviour, namely by promoting environmental efficiency and reducing the carbon footprint. Placing the tourism ecosystem in the leadership of the climate transition towards a new green and inclusive economy, Portugal bases its competitive advantage on the principles of sustainability, on the diversified offer and on the valorisation of its distinctive and innovative characteristics, putting people at the centre of its strategy.

The centrality of ecotourism in this strategy also reserves a specific place for astrotourism and, also as a result, for measures to reduce light pollution, both at national and regional level.

In the Alentejo, for example, this matter is one of the components of the *Biosphere* certification process which is an integral part of the sustainability strategy for tourism in the region, as is the case in the autonomous regions of Madeira and the Azores, with their certification processes as *Sustainable Tourism Destination*, following the criteria of EarthCheck, a certified member of the Global Sustainable Tourism Council.

It is also, on the other hand, the object of numerous projects throughout the country aimed at the conservation of biodiversity, involving municipalities, non-governmental organisations, companies and citizens.

After a set of initiatives in which included a recommendation by the Parliament in 2019 (Resolution of the Assembly of the Republic No. 193/2019) on environmental pollution and its impacts on human health and biodiversity, involving environmental organisations, universities and research centres and civic movements, it is expected that, in Portugal, specific regulations on this matter (so far non-existent) will be produced in the short term, after concrete reference to this goal in the State Budget for 2023 (Law no. 24-D/2022, of 30 December).

Its article 182 on Combating light pollution reads: 1 - The Government legislates on outdoor artificial light, including public lighting and illuminated advertising, establishing limits on the emission of light with regard to quantity, quality, locations and emission periods, in accordance with best practices and scientific knowledge. 2 - The Government establishes a multidisciplinary, technical and scientific commission to evaluate and present proposals for the mitigation of light pollution and control of outdoor artificial light and to set national targets for the reduction of light pollution. 3 - The Government promotes and publishes a national study on light pollution, assessing the degree of contamination caused by artificial light and its impact on biodiversity, human health, quality of life and the night sky.

This is a relevant step towards following up on the aforementioned resolution which, in an innovative way, placed the emphasis on education and information, recommending that, in addition to all forms of pollution, light pollution should also be introduced into school curricula.

The creation of the *Dark Sky Alqueva* reserve in the Alentejo in 2008, around a lake created by the construction of an imposing dam covering an area of 250 km², will have played a decisive role in launching the issue. Integrated strategies have been prepared for the development of tourism in the region, based on a broad and diversified partnership.

The main objectives of the Agenda for Sustainable and Competitive Tourism designed with the development of the Alqueva Dark Sky Reserve include: 1) implement sustainable lighting and pollution management strategies 2) increase tourist attractiveness by increasing territorial marketing based on storytelling about the area, its inhabitants and all key players. The quality of the night sky in the area was certified in 2011 by the Starlight Foundation when it was designated as the first *Starlight Tourism Destination* in the world. It was so designated because it has a high quality tourism offer, organised to receive and support astro-tourists and meets the minimum criteria established: a) Cloudlessness > 50% with cloudless nights (Dark Sky Alqueva has an average of 286 cloudless nights/year); b) Darkness > 21mag/arcsec² (Dark Sky Alqueva records in some places measurements of 21.60 mag/arcsec²); c) Seeing ≤ 2"; d) Transparency: mag 6.

Having, in the meantime, been awarded multiple international tourism awards, the Dark Sky process and brand has extended to other territories in Portugal, namely the *Terras do Xisto* and *Vale do Tua* regions, also with *Starlight Tourism Destination* certifications since 2019 and 2020, respectively.



Turning policy into practice...

Natur@night, Portugal

Although the origin of light pollution is linked to urban spaces, its effects affect both Natura 2000 Network areas and protected species that are not restricted to the borders of classified areas. The Natur@night aims to preserve protected species by reducing light pollution through the involvement of local communities. This project aims to reduce light pollution affecting the protected areas of the Madeira, Azores and Canary Islands archipelagos, and to mitigate its impacts on species protected at EU level. Seabirds will be used as flag species and indicators of the impact of light pollution - one of the priority threats to this group in Macaronesia. By working with local authorities, fishermen and the community to reduce light pollution, more efficient lighting will be implemented, contributing to better resource management and combating climate change.

The intervention includes one study of the impacts of light pollution on biodiversity (seabirds, bats and nocturnal butterflies), mapping light pollution in Natura 2000 sites in Macaronesia, reducing light pollution in two municipalities and developing master plans for public lighting for the remaining ones.

Developing pilot solutions for the lighting of two fishing boats is also planned, as well as developing awareness actions in the three archipelagos next to the populations and administration bodies.

<https://naturaatnight.spea.pt/en/>

Expected outcomes are:

- _information on the abundance and distribution of 10 species of seabirds, 9 of bats and 177 of butterflies

- _light pollution mapped in 27 Natura 2000 sites in Macaronesia

- _430 luminaries removed from sensitive areas and a remote management system implemented to monitor public lighting

- _best practice manuals for lighting on board, in coastal areas and in and around Natura2000 areas

- _EU, national, regional and local legislation on reducing artificial night lighting and minimising its impacts on biodiversity advocated

- _involvement of volunteers to support rescue campaigns and awareness raising actions and establishment of a network of private entities that voluntarily implement good outdoor lighting practices

Activities and results can be followed on: <https://spea.pt/projetos/life-naturanight/>

Useful links and resources for deeper study - Portugal

[Tourism Strategy 2027](#) (PT) is the strategic reference for tourism in Portugal over the current decade, based on a participative, wide-ranging and creative process in which the State assumes its responsibility and mobilises agents and society.

[Sustainable Tourism Plan 20-23](#) (PT) aims to help stimulate the circular economy in tourism, fostering the transition to an economic model based on the prevention, reduction, reuse, recovery and recycling of materials, water and energy, thus strengthening the Agenda for Circular Economy in the Tourism Sector and placing the tourism ecosystem in leading the climate transition towards a new green and inclusive economy.

[Action Plan: Reactivate Tourism | Build the Future](#) (PT) is a plan to put the sector back to its pre-COVID-19 growth path, while at the same time mechanisms to make it more sustainable, more responsible, more competitive and even more resilient, enabling it to overcome the objectives and targets set out in the Strategy for 2027, projecting it into the future.

[Parliament Resolution No. 193/2019](#) (PT) recommends that the Government regulate and adopt measures to combat the impact of light pollution on the environment.

[State Budget for 2023 | Law 24-D/2022](#) (PT) in its Article 182º sets targets for combating light pollution.

[Luminous Pollution Manual - Actions for its Control/Reduction](#) (PT) intends to point out the consequences and to point to actions aimed at a reduction in light pollution. Manual included in Report by sectoral work group within the National Strategy for Green Public Procurement.

SECTION 06

CONCLUSIONS – References



6.1 CONCLUSIONS

From an introduction to dark sky ecotourism to a spotlight on case studies and policy across Europe and in particular in 5 partner countries – Iceland, Ireland, Italy, Denmark and Portugal. We have presented a wide range of opportunities and insights into the potential of dark sky ecotourism.

Now to summarise our findings and offer some conclusions...

Europe needs to focus on dark sky ecotourism as a future tourism trend for several reasons. First, light pollution is an increasingly pressing issue in many parts of the continent, and preserving the night sky can help to mitigate the harmful effects of artificial light on wildlife and human health. Second, dark sky tourism offers a unique and immersive experience for visitors, allowing them to connect with nature and experience the wonder of the universe in a way that is increasingly rare in our modern world. Third, dark sky tourism has the potential to bring economic benefits to rural and remote areas that may not have other forms of tourism, helping to support local communities and promote sustainable development.

Overall, what you have hopefully learned in this guide is that dark sky ecotourism offers a compelling combination of environmental, social, and economic benefits that make it a promising trend for the future of European tourism.

Dark sky ecotourism fits well with European tourism strategies that prioritize sustainability, nature-based tourism, and cultural heritage. The European Commission's Tourism Strategy 2020 identifies sustainability as a key priority for the tourism industry, and dark sky ecotourism aligns with this goal by promoting responsible outdoor lighting practices and supporting conservation efforts to preserve the natural darkness of the night sky.

Nature-based tourism is another important component of European tourism strategies, and dark sky ecotourism offers a unique and immersive way for visitors to connect with nature and experience the beauty of the universe. In addition, many areas that are well-suited for dark sky ecotourism, such as national parks and rural areas, also have cultural heritage value,

providing opportunities for visitors to learn about local traditions and history.

Moreover, dark sky ecotourism has the potential to support sustainable development in rural and remote areas, contributing to regional economic growth and job creation. It also appeals to a growing market of environmentally conscious travellers who are seeking authentic and sustainable tourism experiences.

Overall, dark sky ecotourism fits well with European tourism strategies by promoting sustainability, nature-based tourism, cultural heritage, and regional development.

Tourism businesses should consider the potential of dark sky ecotourism for several reasons. First, it is a growing trend that has the potential to attract new customers and expand the market for tourism businesses. Second, it can help to differentiate a business from competitors by offering a unique and immersive experience that is increasingly rare in our modern world. Third, it can contribute to sustainability by promoting responsible outdoor lighting practices and supporting conservation efforts to preserve the night sky. To tap into the potential of dark sky ecotourism, tourism businesses should consider developing new products and services that cater to this market, such as stargazing tours, night safaris, astronomy workshops, and astrophotography and ecology experiences. They should also work to reduce light pollution and promote responsible outdoor ecotourism practices. By embracing dark sky ecotourism, tourism businesses can help to create a more sustainable and diverse tourism industry, while also offering visitors a unique and unforgettable experience.

6.2 References

World Tourism Organization and United Nations Development Programme (2017), *Tourism and the Sustainable Development Goals – Journey to 2030*, UNWTO, Madrid, DOI: <https://doi.org/10.18111/9789284419401>

[Dark sky tourism is on the rise across the U.S. \(nationalgeographic.com\)](#)

[Building a community-centered destination stewardship initiative - Center for Responsible Travel](#)



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