

# Climate and Ocean:

## Quantifying coastal and marine tourism and protecting destinations

*A Summary Of Key Findings*



## HEADLINE RESULTS

- Coastal and marine tourism contributed **\$1.5 trillion to global GDP through its direct activities in 2023** and \$3.3 trillion when including its supply chain (3.2% of the world economy). This activity **directly supported 52 million jobs** and 100 million total jobs when including the supply chain. Its **direct tax footprint totalled \$820 billion** and \$1.3 trillion in total when including the supply chain.
- It also created a significant environmental footprint, with its directly attributable (Scope 1) greenhouse gas emissions **equalling 0.8% of world emissions**, and its total footprint equalling **3.0% of global emissions** in 2023.
- **Coastal destinations face significant threats from climate change.** Dangers such as rising sea levels and extreme weather are already affecting coastal communities.
- Investments to mitigate climate impacts and adapt to its consequences will cost between **\$30 billion to \$65 billion per year** for the sector's Scope 1 footprint, with the lower end of this range representing the minimum for mitigation efforts alone. Mitigation of its total footprint (including scope 2, scope 3, and international transport footprints) will require an estimated **\$120 billion**, while mitigation and adaptation will require an estimated **\$260 billion**.
- To reduce its emissions the Travel & Tourism sector will need to focus on **decarbonising transportation emissions**, boosting **low-carbon electricity generation**, and **reducing emissions in its supply chain**. Much of this will not be in the direct control of the Travel & Tourism sector, meaning **it relies on joined-up action from government, international organisations, and other parts of the private sector**. It is imperative that Travel & Tourism is a key stakeholder in their efforts to mitigate climate change.
- Adaptation to climate change will involve **protecting destinations from climate hazards** using a range of solutions including **resilient infrastructure, coastal defences, early warning systems and nature-based solutions**, with these also requiring coordination with other stakeholders including businesses and governments. When managed well, this can enhance the Travel & Tourism sector's role as a positive force in coastal communities.

Tourists flock to the world's coastal tourism destinations in search of pristine beaches, underwater worlds, water-based activities, and for the opportunity to see marine life. An estimated 50% of tourist spending takes place in coastal destinations, totalling \$3 trillion in 2023<sup>1</sup>.

This generates large economic and social footprints, with coastal and marine tourism critical to the economies of many countries. It also results in environmental impacts and contributes to climate change. However, Travel & Tourism is also facing significant threats from climate change that it needs to adapt to.

This document presents the key preliminary findings from an upcoming report on the value of coastal and marine tourism, the challenges that climate change poses to it, and the investments needed to both mitigate its associated emissions and adapt to climate change.

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1. Northrop et al., '[Opportunities for Transforming Coastal and Marine Tourism: Towards Sustainability Regeneration and Resilience](#)', 2022.



## Coastal And Marine Tourism Generates Large Amounts Of Economic Value

Leveraging the World Travel & Tourism Council's existing analysis of the economic and environmental footprint of global Travel & Tourism<sup>2</sup>, the coastal and marine tourism sector is estimated to have generated the following economic footprint in 2023:

- A direct gross value-added contribution to GDP worth \$1.5 trillion, which is 1.4% of global GDP. This rises to \$3.3 trillion, which is 3.2% of global GDP, when supply chain impacts are included<sup>3</sup>.
- Direct employment of 52 million people, or 100 million including supply chains.
- \$820 billion in direct tax revenues, rising to \$1.3 trillion including its supply chain.

This footprint is generated by coastal destinations in countries all around the world. It is comprised of locations with a variety of characteristics, including different levels of economic development, contrasting climates, and a diverse range of natural attractions. Many destinations are rural, but there are also urban areas including major cities. Furthermore, coastal and marine tourism can be a major part of a nation's economy, or a smaller part of a large or highly diversified economy.

The countries most dependent on coastal and marine tourism tend to be small island developing states. For destinations such as Grenada, the Seychelles, the Maldives, and Aruba, the direct economic footprint of the Travel & Tourism sector represents a quarter or more of domestic GDP. This increases to more than half of the economy with its supply chain included. Within these destinations, coastal and marine tourism is essential to creating jobs for the local population, generating tax revenues that fund public services, and offering a pathway to economic growth and greater prosperity. These benefits are also seen in above-average employment of young people and women within many destinations.

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2. WTTC, '[Travel & Tourism's Global Footprint](#)', 2024.

3. The induced economic footprint, which is the contribution made as employees spend out of their wages, is not included in this study as it does not have a commonly accepted environmental equivalent. The total footprint therefore consists of the direct and indirect (i.e., supply chain) impacts.

## Coastal And Marine Tourism Has A Large Environmental Footprint

The large amount of economic activity that Travel & Tourism sustains in coastal destinations creates demand for energy and resources. Producing energy and products to meet this demand generates significant greenhouse gas (GHG) emissions, driven primarily by the burning of fossil fuels.

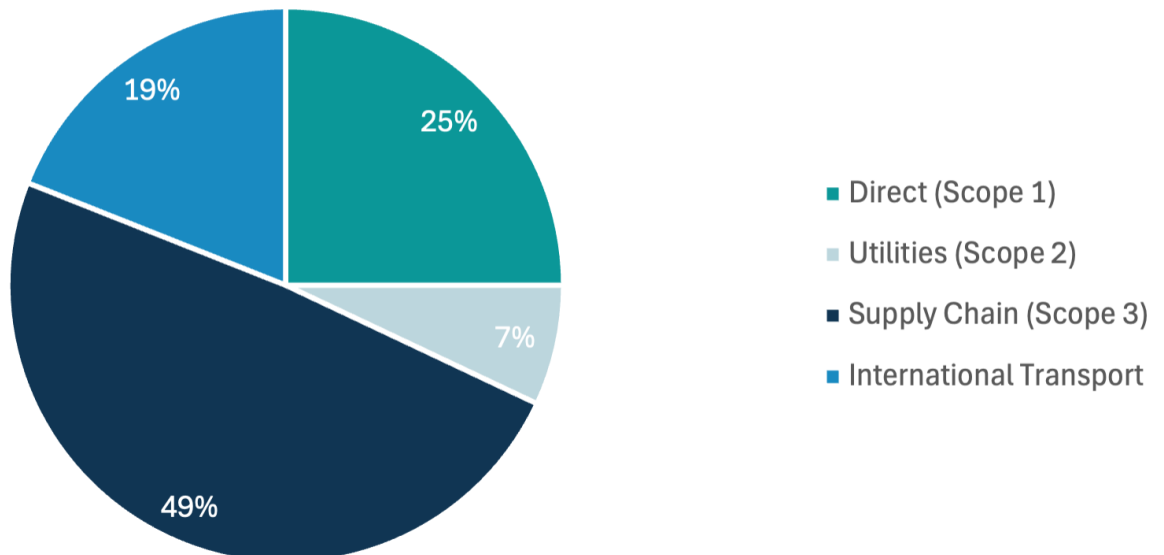
The direct activities supported by visitor spending within coastal and marine tourism destinations globally (the sector's Scope 1 impact, excluding international transport), generated an estimated 390 million tonnes of CO<sub>2</sub> equivalent (CO<sub>2</sub>e) GHG emissions in 2023. This represents a quarter of the coastal and marine tourism sector's total GHG emissions, or 0.8% of global GHG emissions.

The main source of these Scope 1 emissions is domestic transportation, generating 65% of all the Scope 1 emissions, and consisting of within-country land transport, aviation, water transport and other forms of transportation. As well as this, additional emissions footprints were made by the hospitality, manufacturing, and agriculture industries in service of coastal and marine tourism activities.

The total GHG emissions footprint of coastal and marine tourism was an estimated 1.57 billion tonnes of CO<sub>2</sub>e GHG emissions in 2023. This represented 3% of global GHG emissions in 2023, a footprint that is similar in scale to its total contribution to global GDP (3.2%).

Approximately 7% of total emissions came from the sector's electricity demand (the Scope 2 footprint), with a further 49% from its supply chain (the Scope 3 footprint). Within the Scope 3 footprint, the major contributing industries are manufacturing, electricity generation (in addition to its Scope 2 footprint), agriculture, the production of fuels and supply chain transportation. International transport, including both aviation and cruises, generated an estimated 300 million tonnes of CO<sub>2</sub>e emissions for coastal and marine tourism in 2023.

% Share of coastal and marine tourism's total GHG emissions in 2023



## Climate Change Is A Significant Threat To Coastal Tourism Destinations

Coastal destinations are disproportionately exposed to climate risk, which affects destinations themselves and people – those that live there and those who wish to visit them. Nearly 40% of the global population resides within 100 km of coastlines, all of whom face risks from rising sea levels, increasing extreme weather events, drought risk, and ecosystem loss<sup>4</sup>. As the effects of climate change increase over time, the Travel & Tourism sector within coastal destinations faces significant risks, and associated costs.

For example, one study estimated that arrivals to the Caribbean could fall by about 1% per year because of climate change, costing the region over one hundred million dollars in lost tourist spending per year. This figure could be as high as a 5% reduction in tourists per annum in some countries which are particularly at risk from a range of factors linked to climate change<sup>5</sup>.

Small island developing states are especially vulnerable without adaptation to storms and sea-level rise. For example, in the Pacific region, 320,000 people were displaced due to climate and weather-related disasters between 2008 and 2017<sup>6</sup>. In some cases, disaster-related economic losses are already believed to have reached as high as 200 percent of the size of a national economy, as was seen in Dominica in 2017<sup>7</sup>.

Economic exposure to climate risk is particularly high in urban coastal destinations. Analysis from C40 Cities estimates that by 2050, 800 million people will live in cities where sea levels could rise by more than half a metre, affecting cities such as Miami, Guangzhou, New York, Bangkok, Jakarta, and Mumbai<sup>8</sup>. This threatens key tourism destinations directly, as well as impacting the transport nodes that are important for onward tourism.



4. Laino, E. and Iglesias, A. [‘Multi-hazard assessment of climate-related hazards for European coastal cities’](#), 2024.

5. Moore, WR. [‘The impact of climate change on Caribbean tourism demand’](#), 2009.

6. IOM, [‘Climate Change and Migration in Vulnerable Countries’](#), 2019

7. <https://www.imf.org/en/Topics/climate-change/resilience-building#Blogs>

8. C40 Cities, [‘Sea Level Rise and Coastal Flooding’](#), 2018.

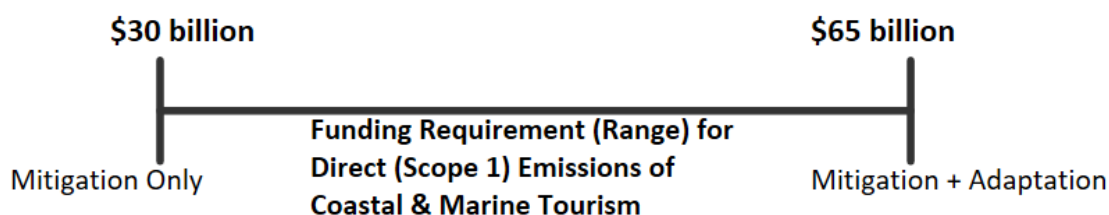
## Significant Climate Funding Will Be Required To Mitigate Impacts And Adapt To A Changing Climate

Coastal and marine tourism faces the dual challenges of mitigating its GHG emissions and adapting to build resilience to climate change. The potential costs of climate change to coastal and marine tourism are high and widespread. Whilst mitigating climate change will be important, the causes of climate change are global, meaning that individual destinations may find it harder to move the needle on climate change by solely concentrating on mitigation efforts. Simultaneous efforts to adapt to a changing climate will be required, including more localised action based on a destination's needs.

To understand the magnitude of these challenges, it is important to examine and contextualise the scale of investment that may be required. Below are a range of respected international sources which have produced estimates of the scale of investment required to mitigate the impact of climate change, as well as some that include the spending required for adaptation (all values in 2023 prices).

- The International Energy Agency (IEA) has estimated that \$4 trillion of clean energy investment will be required each year by 2030 to mitigate the impacts of climate change<sup>9</sup>. If we scale this to coastal and marine tourism's share of global GHG emissions, this implies investment of around \$31 billion per year to cover the Scope 1 footprint of the sector and \$126 billion for the sector's total GHG emissions.
- The Climate Policy Initiative (CPI) estimated that annual climate finance flows must increase to \$8.5 trillion per year by 2030, based on their synthesis of a range of estimates of climate financing needs. This includes both mitigation and adaptation needs. Scaling this estimate to the coastal and marine tourism sector's emissions implies investment of \$65 billion to mitigate and adapt its Scope 1 footprint, or \$260 billion for the total environmental footprint sector<sup>10</sup>.
- Guidance in WTTC's Net-Zero Roadmap for Travel & Tourism suggest that mitigation and adaptation funding should total 2-3% of companies' revenues<sup>11</sup>. Scaling this according to coastal and marine tourism spending implies required funding in 2023 worth \$120 billion to \$180 billion, including all scopes of its footprint.

Through analysis, it can be concluded that coastal and marine tourism will require investment between approximately \$30 billion (mitigation alone) and \$65 billion per year (mitigation and adaptation) in order to address its Scope 1 climate footprint<sup>12</sup>.



Including the sector's total GHG footprint will require investment worth approximately \$120 billion to \$260 billion per year, with the lower end of this range representing the minimum required for mitigation spending alone. These estimates are based on the size of the sector in 2023 and would therefore need to grow in line with any change in its environmental footprint or inflation.

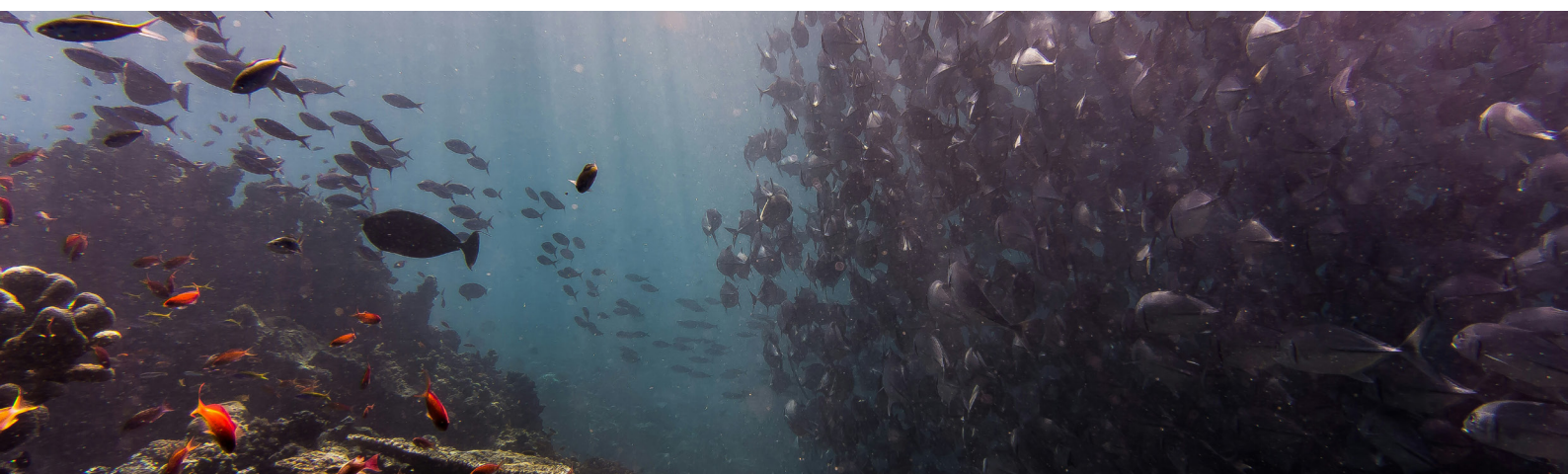
9. IEA, '[Net Zero by 2050. A roadmap for the global energy sector](#)', 2021.

10. CPI, '[Top-down Climate Finance Needs](#)', 2024.

11. WTTC, '[A Net Zero Roadmap for Travel & Tourism](#)', 2021.

12. Adaptation funding is likely to require investments that protect a range of different industries together. As a result, the funding requirements for the sector's total footprint are likely to give a more accurate representation of the investment required.

This illustrates the potential scale of the investment required by the coastal and marine tourism sector. Yet, despite the scale of the global challenge for all sectors of the economy, the funding required for the energy transition and addressing climate change are not being met globally. The CPI analysis estimated that only one-seventh of the required investment is currently being made, highlighting the need for further investment<sup>13</sup>. While coastal and marine tourism generates a direct tax footprint, totalling \$820 billion or \$1.3 trillion when including the supply chain, it does not mean that mitigation and adaptation funding will be available from tax revenues given the other spending commitments of governments. As such a mix of public and private financing will be required to meet the challenge.



## Effective Ways To Mitigate Coastal And Marine Tourism’s Climate Impact

The global Travel & Tourism sector set the goal to halve its GHG emissions by 2030 and reach net zero emissions as soon as possible before 2050 in the Glasgow Declaration on Climate Action in Tourism. Coastal tourism destinations will have to make significant investments to do their part in achieving this target. This report provides valuable insights into the priorities for decarbonising the sector. It also includes research on the actions required for economy-wide decarbonisation, as outlined in the IEA Net-Zero Emissions by 2050 analysis. The IEA analysis seeks to achieve a 35% reduction in global GHG emissions between 2022 and 2030<sup>14</sup>.

As the primary source of coastal and marine tourism emissions globally, transportation will need to be a key priority for decarbonisation, with a focus on adopting alternative sources of energy to oil. In line with this, transportation is one of the top three areas of focus within the IEA Net Zero by 2050 roadmap<sup>15</sup>.

For land transport, which is the main contributor to Scope 1 emissions, use of public transport and vehicle electrification can drive significant reductions in GHG emissions, assuming the electricity grid is low-carbon. The potential for improvement here can be seen in the way that electric vehicle adoption rates vary significantly in different parts of the world, with Europe having consistently seen double the rate of adoption of the United States of America, despite having similar-sized economies<sup>16</sup>. The challenge for international transport differs somewhat, with the IEA roadmap identifying a need for alternative fuels for aviation and cruise ships, but these are not yet being produced on a large scale.

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13. CPI, “Top-down Climate Finance Needs”, 2024.

14. <https://www.iea.org/reports/net-zero-roadmap-a-global-pathway-to-keep-the-15-0c-goal-in-reach/a-renewed-pathway-to-net-zero-emissions>

15. <https://www.iea.org/reports/net-zero-by-2050>

16. <https://www.iea.org/reports/global-ev-outlook-2024/trends-in-electric-cars>

Another key requirement for coastal and marine tourism decarbonisation comes from electricity generation, given the electricity purchases required to support Travel & Tourism providers and their supply chain. Here, significant variation is visible within regions. In Southeast Asia, Thailand's grid emissions factors are a quarter lower than those of the Philippines and more than two-fifths lower than Indonesia, driven largely by Thailand's lower dependence on coal<sup>17</sup>. In other regions the deployment of renewable energy has been rapid, highlighting the opportunities for further decarbonisation. The IEA roadmap identifies the use of clean energy for electricity and heating as the primary global requirement for decarbonisation, highlighting the large extent to which this issue goes beyond the Travel & Tourism sector or coastal tourism economies.

As well as this, the sector's Scope 3 footprint includes emissions in industries such as agriculture, manufacturing, and fuel production. These emissions largely fall outside the direct control of the Travel & Tourism sector, making it important for businesses in the sector to work proactively with their suppliers to develop sustainable procurement options. Alongside its commitment to reducing emissions and reaching net-zero, the Glasgow Declaration on Climate Action in Tourism requires destinations submit and deliver climate action plans that will guide them to achieving this. However, signatories' GHG emissions challenges and decarbonisation strategies vary based on the nature of their footprint and the actions they are able to take.

In Scotland, Visit Scotland's plan focusses on measuring and reporting GHG emissions, investing in renewable energy and energy efficiency, and low-carbon consumption. There is also increased partnership between Scotland's tourism and transport sectors to influence and support development of appropriate low-carbon infrastructure and services. This partnership aims to make Scotland's low-carbon transport options more attractive and accessible to tourists and residents<sup>18</sup>.

In Mauritius, decarbonisation of tourism has priority areas like food production, which accounts for about 27% of the GHG emissions associated with hotels and restaurants; electricity generation, which makes up 18% of GHG emissions; and waste landfill which accounts for 8% of GHG emissions.<sup>19</sup> This alternative focus illustrates how priorities vary across different locations based on the nature of their environmental footprint.

The challenge of reducing greenhouse gas emissions requires action from many sources. Companies working in the Travel & Tourism sector within coastal destinations only have direct control over a small portion of their emissions footprint. Other requirements, such as reductions in supply chain emissions, decreasing grid electricity emissions, and decarbonising transportation networks will require action from governments, development organisations, and industry at the local, national, and international levels. The Travel & Tourism sector in coastal destinations is an important stakeholder in the decarbonisation process given the extent to which it relies on other sectors to succeed, and it can use its position to try and drive wider change.

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17. <https://www.iea.org/countries/>

18. Visit Scotland, 'Destination Net Zero Climate Action Plan', 2022.

19. UNEP and Mauritius Ministry of Tourism, 'Action Plan for Low Carbon and Resource Efficient Accommodation in Mauritius', 2019.





## Adapting To The Threat Of Climate Change

Regardless of the progress made towards mitigating climate change, coastal and marine tourism faces an urgent need to adapt to climate change. The vulnerability of coastal areas to climate change is clear, with threats such as rising sea levels, extreme weather, drought, and ecosystem loss already impacting destinations and local communities. Mitigation of these impacts is likely to take time, but the impacts of climate change are already taking place. As a result, destinations have an urgent need to invest in solutions to adapt to the changing climate and to sustain the economic value that supports their local communities.

A range of solutions are likely to be required, including resilient infrastructure, coastal defences, and early warning systems<sup>20</sup>. For instance, nature-based solutions, such as re-growing mangroves, have the potential to protect coastal destinations from the worst effects of climate change, whilst also restoring nature and absorbing carbon dioxide from the atmosphere. They also have the potential to make destinations even more attractive to visitors.

One example of a nature-based solution is the Mangrove Action Project in Nai Nang, Thailand, where the community is supporting mangrove forest protection while pursuing alternative sources of income via beekeeping. Beekeeping has additional advantages in maintaining the biodiversity of the area through pollination. Furthermore, honey produced by the community is sold in hotel shops, including products further up the value chain such as honey-based soaps<sup>21</sup>.

An example of climate adaptation in an urban coastal destination can be found in Miami. Tourism generates approximately \$30 billion in the City of Miami, and accounts for 9% of the overall economy in Miami-Dade County.<sup>22</sup> Given the high economic exposure to climate risk, there is high emphasis in the city-wide adaptation plan on investing in resilient and smart infrastructure, protecting and enhancing the waterfront, and promoting adaptive neighbourhoods and buildings. The plan also focuses on data-driven approaches to inform, prepare, and engage businesses, including those in the Travel & Tourism sector. The City's climate action plan covers a wide range of risks such as coastal flooding and extreme heat<sup>23</sup>.

Thus, funding must balance the needs of adaptation alongside the drive to mitigate climate impacts. The adaptation investments that destinations require will need to address the specific threats that they face, alongside acting on commitments to reduce their GHG emissions footprint. In doing so, well managed coastal destinations can sustain the value that the Travel & Tourism sector creates for them and the communities that rely on it, as well as driving positive change for nature.

20. Magnan, A.K., Bell, R., Duvat, V.K.E. et al. 'Status of global coastal adaptation'. *Nature Climate Change*. 2023.

21. Global Commission on Adaptation, 'Three ways tourism can support climate adaptation', 2024.

22. <https://www.meetingspotlight.com/destination/miami-dade-tourism-market-reaches-30-billion-economic-impact>

23. City of Miami, 'Miami Forever Climate Ready', 2020.

# Acknowledgements

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