Envisioning Tourism in 2030 and Beyond

The changing shape of tourism in a decarbonising world

Summary Report

theTravel Foundation
Stenden
etfi European Tourism Futures Institute
Breda University of Applied Sciences
NBTC Netherlands Board of Tourism & Conventions
CELTH Centre of Expertise leisure, tourism & hospitality

Envisioning Tourism in 2030 and Beyond
The changing shape of tourism in a decarbonising world

This is the summary of the full report, prepared for the Travel Foundation by the authors.

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Many other people also helped to shape the analysis by providing feedback and insights at workshops, webinars and meetings, and by contributing to early drafts. We are sincerely grateful for their time.

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Foreword

Our starting point for this research was the need to better understand, or "envision", how the travel and tourism world will look in 2030 and beyond, as we transition towards a net zero emissions economy. The Travel Foundation, as a partner organisation for the Glasgow Declaration on Climate Action in Tourism, supports its call on all businesses, destinations and supporting organisations to make a plan and implement it. But how can any organisation effectively plan for the future if it doesn't know what that looks like?

Our intention is not to prescribe a roadmap or set of measures. We explicitly explored scenarios in which travel and tourism's projected growth could be compatible with achieving the climate targets laid out in the Glasgow Declaration, which stem from the Paris Agreement. The fact that there is only one future scenario that resembles business as usual in a decarbonising world - even with several pain points built in - does not make it the project team's 'recommended' route. It simply makes it the reality we face.

We have delayed action for too long, and as a result, our options have narrowed. This assessment should act both as wakeup call and motivation to act. There is huge opportunity for travel and tourism in a decarbonising world, but we must act with urgency and unite in our vision for a "good" transition.

The big take home message is that we have moved into a new paradigm where the only option is systems transformation. We should therefore call out the many overly optimistic strategies and plans which assume – implicitly or explicitly – that we can carry on as usual in the (blind) hope that technology and offsetting will see us through.

We also want to bring attention to the need for fairness and equity in the way tourism transitions to net zero. The policies we draft, the investments we make and the products we develop will either exacerbate or lessen existing inequalities. Will vulnerable communities once again be handed the worst deal? Or will underrepresented voices be listened to and acted upon? We sought to include a diverse range of perspectives as we developed our analysis, but this is only the beginning of the discussion. And going forward we must further explore additional scenarios that complete our vision of 2030 -- and deeply consider what we must prioritise in order to build resilience for the many challenges ahead.

Let's also make it the start of significant collaboration to ensure tourism is part of the solution. A "good" transition is within our reach but we need to think and act differently if we are to grasp it and make it reality.

Jeremy Sampson,
CEO, the Travel Foundation

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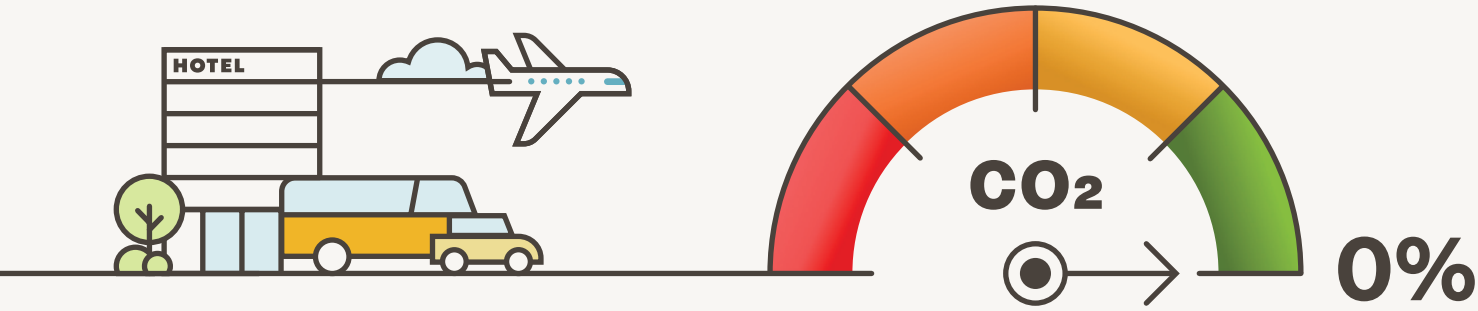
Introduction and context

Envisioning Tourism in 2030 Overview



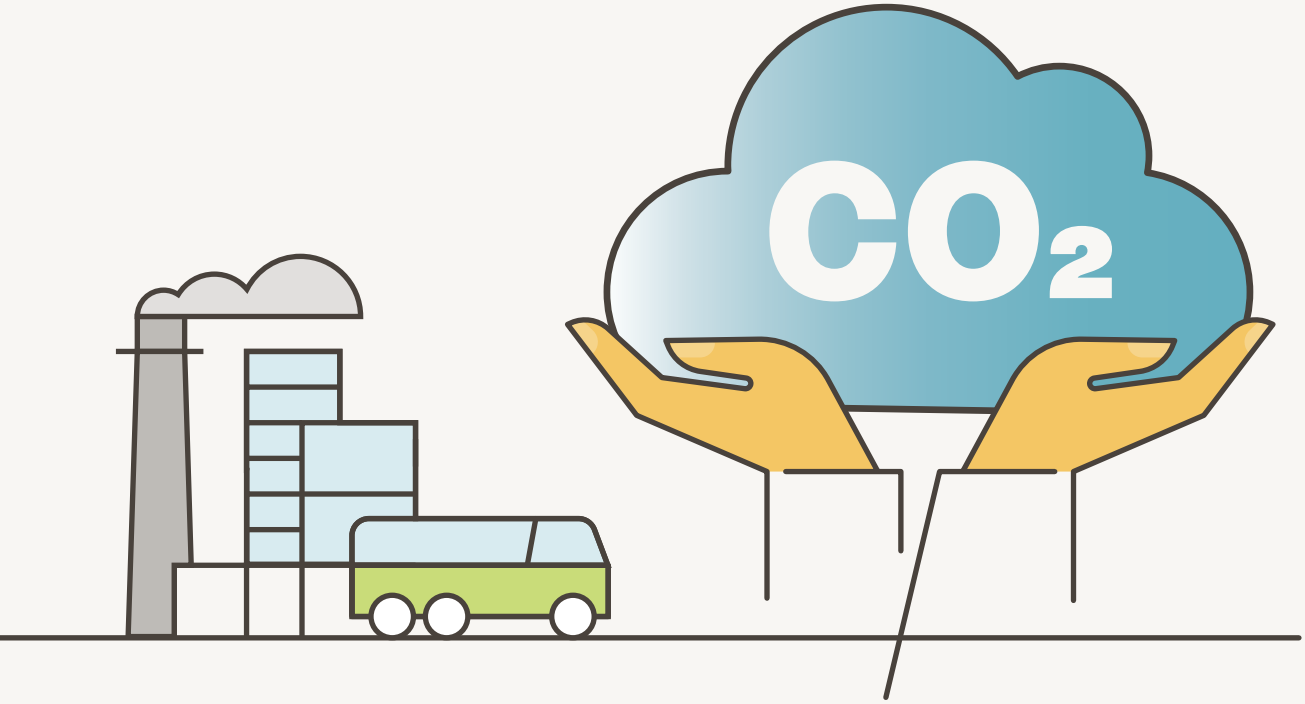
Envisioning Tourism in 2030 has been developed to help policymakers and the tourism industry understand what a global, thriving, decarbonising tourism industry could look like by the end of this decade, and through to 2050 when tourism, and every other human activity, must achieve net zero greenhouse gas emissions.

The report is intended to provide a positive vision of a net zero visitor economy which can also provide guidance for tourism stakeholders as they plan for a future that is consistent with global climate targets. This document is a summary for a broad audience, and a more detailed report can be downloaded here.

Envisioning Tourism in 2030 is published by the Travel Foundation in collaboration with Breda University of Applied Sciences (BUas), European Tourism Futures Institute (ETFI) at NHL Stenden University of Applied Sciences, the Centre of Expertise Leisure, Tourism and Hospitality (CELTH), and the Netherlands Board of Tourism and Conventions (NBTC). It also contains additional input and perspectives from a broad range of businesses, tourism destinations and other stakeholders across the world.

The objective of this report is not to prescribe in any detail the measures required to decarbonise the travel and tourism system and achieve global climate targets, but to provide a realistic assessment of what needs to be done and how it will change the shape of tourism. Our focus is primarily on the implications for destinations and the businesses that rely on them.

Why do we need to act?



The UN describes reaching net zero as: “one of the greatest challenges humankind has ever faced. It calls for nothing less than a complete transformation of how we produce, consume and move about.”

Climate change is already visible throughout the world, with floods, droughts, fires, melting glaciers, storms and rising sea levels wreaking havoc. To preserve a liveable planet and keep global warming to no more than 1.5 degrees centigrade, as called for in the Paris Agreement, the UN has reported that global carbon emissions need to be halved by 2030 and must reach net zero as soon as possible and no later than 2050. It is important that all sectors and industries act globally.

However, business-as-usual in the tourism sector would see global emissions growing rapidly, not reducing.

What is travel and tourism's global carbon impact?

Global CO_2 emissions can be evaluated in two ways:

Direct emissions only

This includes the main principal operations of tourism such as flights, car journeys, rail and other transportation, energy use in accommodation, and tourism activities in destinations.

The tourism's sector's direct emissions are estimated to be **around 5%** of global CO_2 emissions.

Transport represents 75% of tourism sector direct emissions (air 40%, car 32%, other transport 3%), accommodation 21% and other tourism activities 4% (Scott et al., 2008).

Both direct and indirect emissions

This includes indirect emissions from tourism's value-chain suppliers, also known as scope 3 emissions – such as emissions associated with laundry services and food production.

Tourism's direct and indirect emissions account for **between 8 to 11%** of global CO_2 equivalents (Lenzen et al., 2018 and WTTC, 2021).

Of course, all emissions, whether direct or indirect, must reduce and the travel and tourism sector should affect change with suppliers throughout its considerable value chain. However, in this report the focus is predominantly on direct emissions.

Driven by a growing global population, affordability, and many other factors, tourism is set to almost double in size by 2050 from 2019 levels. If business-as-usual continues, its emissions will also rise steeply (direct emissions increasing by 73%). In such a scenario, tourism would use a staggering 66% of the remaining climate budget between 2023 and 2100.

The gap between business-as-usual and the decarbonisation pathway is vast, and immediately demonstrates that nothing short of transformation is required.

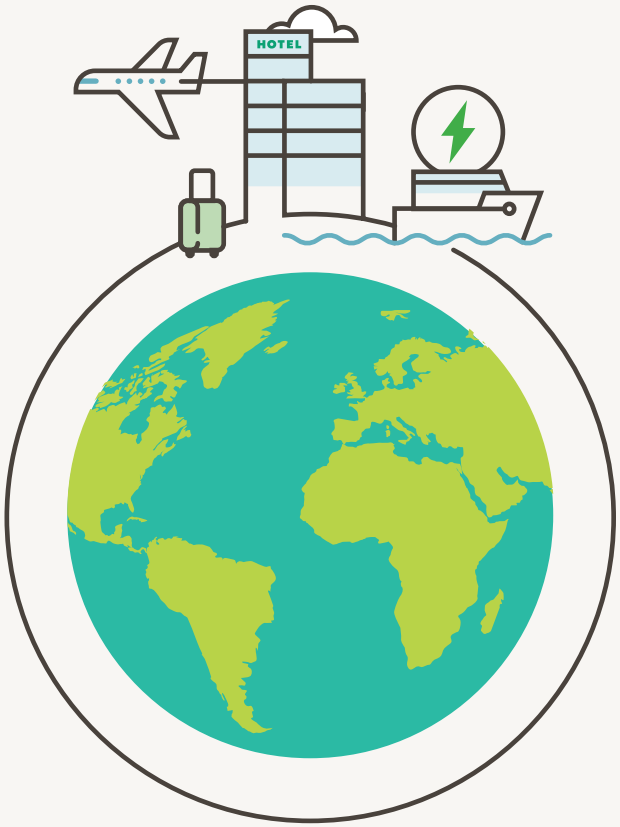
The Glasgow Declaration for Climate Action in Tourism

Glasgow Declaration
Climate Action in Tourism

The Glasgow Declaration for Climate Action in Tourism was launched at COP26 in 2021 to accelerate climate action in tourism. It supports the global targets to halve emissions over this decade and reach net zero emissions as soon as possible before 2050. It was drafted by the United Nations World Tourism Organisation (UNWTO), United Nations Environment Programme (UNEP), VisitScotland, Tourism Declares a Climate Emergency and the Travel Foundation, with inputs from more than 30 organisations involved with the United Nations' One Planet Network. Following launch, the initiative is now led by the UNWTO with the Travel Foundation as a supporting partner.

Signatories are provided with advice and guidance to deliver a climate action plan within 12 months of signing, and to report on progress annually. There is now barely seven years remaining for the world to reduce emissions substantially by 2030. Everyone involved in travel – businesses, destinations and "supporting" organisations – are encouraged to sign up to the Glasgow Declaration to share their best practices and to develop their own climate action plan, using the five pathways of measure, decarbonise, regenerate, collaborate and finance.

What else is already happening in tourism?



In addition to the Glasgow Declaration on Climate Action in tourism, tourism sectors such as aviation and accommodation are focusing on net zero approaches for their stakeholders. For example:

The Net Zero Methodology for Hotels developed jointly between Tourism Declares, Greenview, the Pacific Asia Travel Association (PATA), Sustainable Hospitality Alliance and the World Travel and Tourism Council (WTTC) offers a methodology, for hotels of any size, that can be adapted with milestones to achieve every five years.

A Net Zero Roadmap for Travel and Tourism published by the WTTC, UNEP, UNFCCC and Accenture released In November 2021.

A Long Term Aspirational Goal (LTAG) for international aviation to reach net zero by 2050, agreed by the 193 member countries of the International Civil Aviation Association (ICAO) in October 2022.

In the same month the Cruise Lines International Association (CLIA) produced its annual Global Cruise Industry Environmental Technologies and Practices Report and confirmed the sector is supporting the shipping sector's Getting to Zero Coalition's Call to Action for Decarbonisation of Shipping.

Individual governments are also taking action:

Banning short haul flights where there is an alternative

- In April 2022 the French government banned short-haul flights where there is a train or bus alternative of two and a half hours or less exist. The new rule is part of an overall effort by France to reduce carbon emissions by 40% by 2030.

Capping airport capacity

- In June 2022 the Netherlands government became the first in the world to announce a reduced cap on airport capacity for environmental reasons. From the end of 2023 the number of flights from Amsterdam's Schiphol Airport will be fixed at 440,000, a 12 percent cut from pre-pandemic levels.

Introducing carbon pricing for aviation

- The European Union is set to phase out free permits for airlines emitting CO2 by 2026, retaining a limited number for airlines using Sustainable Aviation Fuels (SAF) to help compensate for the higher costs associated with these fuels.

Encouraging greater use of rail

- During June and August 2022 Deutsche Bahn, Germany's rail authority offered a heavily subsidised rail ticket for unlimited local and regional train travel costing 9 euros a month. 52 million tickets were sold and the Association of German Transportation Companies (VDV) estimates this saved 1.8 million tons of CO_2 during the period. Following this success, a 'Deutschlandticket' or German Ticket is now being introduced, valid on all buses and regional and local trains for 49 euros a month.

- The Spanish government has announced that all commuter and mid regional journeys of less than 300km run by the national rail operator Renfe will be free until at least 31 December 2023.

Including international aviation in NDCs

- The Paris Agreement established the protocols for Nationally Determined Contributions (NDCs) which require each country to regularly outline and communicate their climate action in key sectors. International aviation and shipping emissions were not included as a requirement in the Paris Agreement NDCs, however some countries such as the UK and the Netherlands are now voluntarily including them.

Supporting adoption of Sustainable Aviation Fuels (SAF):

- A Refuel EU Aviation Initiative is under consideration. This would mandate 2% SAF in 2025, increasing to 5% by 2030, 32% by 2040 and 63% by 2050.

- Several European nations already have mandated levels of SAF to be used in aviation this decade and beyond. For instance, Sweden has mandated SAF use at 1% by volume in 2021 to 30% in 2030, and France has mandated 1% in 2022, 2% in 2025, 5% in 2030 and 50% in 2050.

- Other non-European nations such as Brazil and Japan have also set SAF mandates for this decade.

Encouraging electric ferries

- Electric ferries have been pioneered in Norway. By 2026, western Norway's fjords will only allow zero-emission electric ferries, cruise ships, and tourist boats.

- Electric ferries are also being launched worldwide. For example, in 2022 the Ika Rere became the first fully electric ferry to launch in the Southern Hemisphere in Wellington, New Zealand. In 2023 Spain's first fully electric ferry, the Cap de Barbarià, will operate between Ibiza and Formentera and in the same year an innovative new electric "flying ferry" will be tested in the UK.

Perspective:

Netherlands Board of Tourism and Conventions (NBTC)

Sustainability is a must, we say. That is why NBTC, together with several other key stakeholders in the Netherlands, co-signed the Glasgow Declaration and, again with many partners, developed a roadmap towards Climate Neutral Tourism.

When it comes to the issue of climate neutrality, we still have a long road ahead of us. But while this all won't be easy, there is a lot of hope as well. In the Envisioning 2030 scenario, we see growth for the sector as a whole, both in number of trips and revenue. This scenario vehemently refutes the notion that tourism must cease to exist or that we should stop flying all together. This is important: we have to safeguard the values and positive impact travel can bring for future generations as well. This also means, however, that we need to start asking the right questions. Not if or what we should do, but how we can create the right incentives and transition as fairly and equitably as possible.

Envisioning 2030 shows us that, however hard it is going to be to achieve this, this change will offer immense opportunities for destinations, businesses and travelers. We believe, therefore, that we should start this change right now and work together towards this new reality.

Ewout Versloot,
Strategist

Perspective:

Government of Chile

Chile is a country highly exposed to the consequences of climate change and, in particular, our tourism industry faces high risks. The task is enormous, but taking action as soon as possible will allow effective results to be achieved in the medium and long term.

We are a distant country, so depend to a greater extent on long-distance visitors. However, given the scenario described, tourism has the task of reorienting or deepening strategies aimed at its domestic and near-proximity markets, offering medium and short-distance services and destinations which can be complemented by more sustainable modes of transport, such as trains, cars or ferries. In Chile we have the opportunity to take actions such as designing experiences, accommodation or tourism services with near-zero emissions, as well as carrying out an extensive review of existing products to promote change. It is important that carbon management is incorporated into the design of public policies and in the development of products so that the carbon footprint of tourists, customers, markets, or products is taken into account.

We call on the entire tourism industry to coordinate efforts. Innovation, technology and the exchange of data are the paths that have shown to give favorable results in terms of sustainability. Therefore it is essential that the public and private sectors share strategies or results that contribute to making tourism an even greener industry.

Verónica Kunze,
Undersecretary of Tourism

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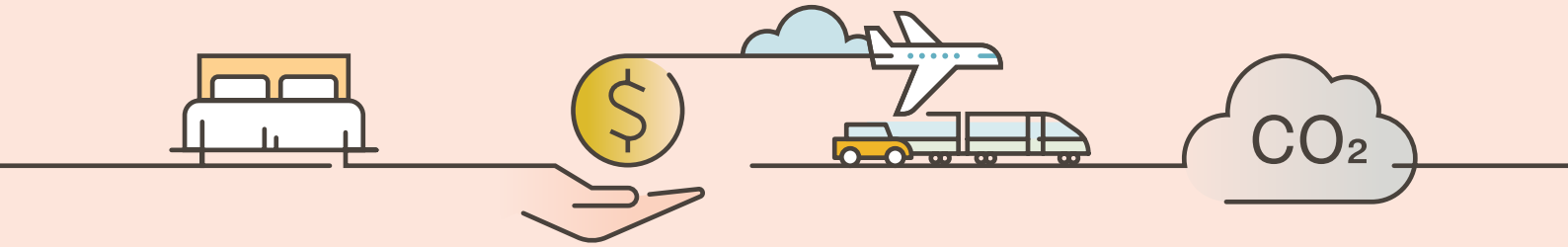
Envisioning Tourism in 2023

How the model works

To identify possible future scenarios, a "systems dynamics" model was used to test various decarbonization pathways. This model was developed by Professor Paul Peeters of Breda University of Applied Sciences over several years and draws on a large number of robust data sources. The model provides estimations for the global tourism system – defined as transport and accommodation - including all trips of at least one night away from home (both domestic and international visits), for holiday, leisure, business and visiting friends and family.

It calculates, at a global level:



Annual global guest nights

Revenues

The number of trips and distance*

CO_2 emissions**

* (trip = return trip – there and back. Distance = passenger kms travelled).
** (direct emissions based on energy consumption).

Modes of travel included are aviation, cars, and other modes including rail, coaches, other public transport and ferries. Cruise is not included in the model, and although it only accounts for a small share of emissions globally (less than 1% of direct emissions), it should be noted that its emissions per tourist can be very high (averaging 0.83 tonnes of CO2e for each passenger on a cruise) (Global Sustainable Tourism Dashboard, 2017 figures).

The analysis includes a reference, or **"business-as-usual" (BAU)**, scenario showing emissions if the travel industry does not make additional changes, using 2019 as a baseline year. The clear gap between the reference, or business-as-usual, scenario compared to the 2030 and 2050 emissions targets illustrates the huge challenge ahead for the travel industry.

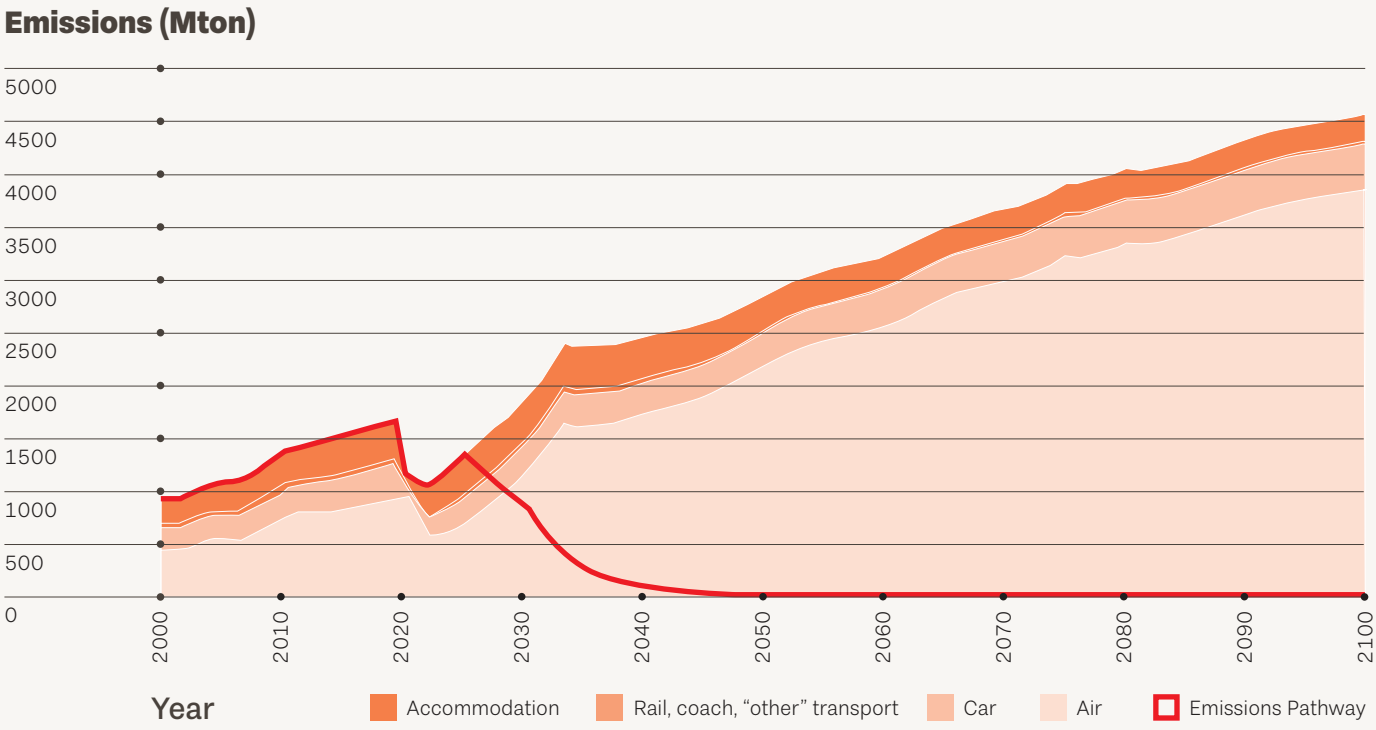


Figure 1. *Graph showing the significant gap between business-as-usual growth in emissions, and the global emissions pathway to net zero*

40 different emissions reduction interventions were tested in the model, which could be either "dialled up" or "dialled down" (for more detail, see the main report). The main interventions were grouped around:

- **(Mandated or subsidised use of) sustainable aviation fuel (SAF).**
- **Electrification of transport and accommodation.**
- **Technology and infrastructure (e.g. more efficient aircraft, high speed rail).**
- **Offsetting.**
- **Taxes and subsidies.**

There were also interventions grouped around travel speed (affecting fuel efficiency) and travel behaviour (such as inclination to travel, and the perceived value of long-distance travel).

Testing the impact of interventions

The intention was to identify several different scenarios that would allow a decarbonisation pathway and for travel and tourism to thrive. However, it soon became apparent that current strategies which rely solely on carbon offsetting (even assuming 100% effectiveness), technological efficiencies and SAF are woefully inadequate. Such measures, even combined at high levels, will fail to meet the Paris Agreement-aligned goals.

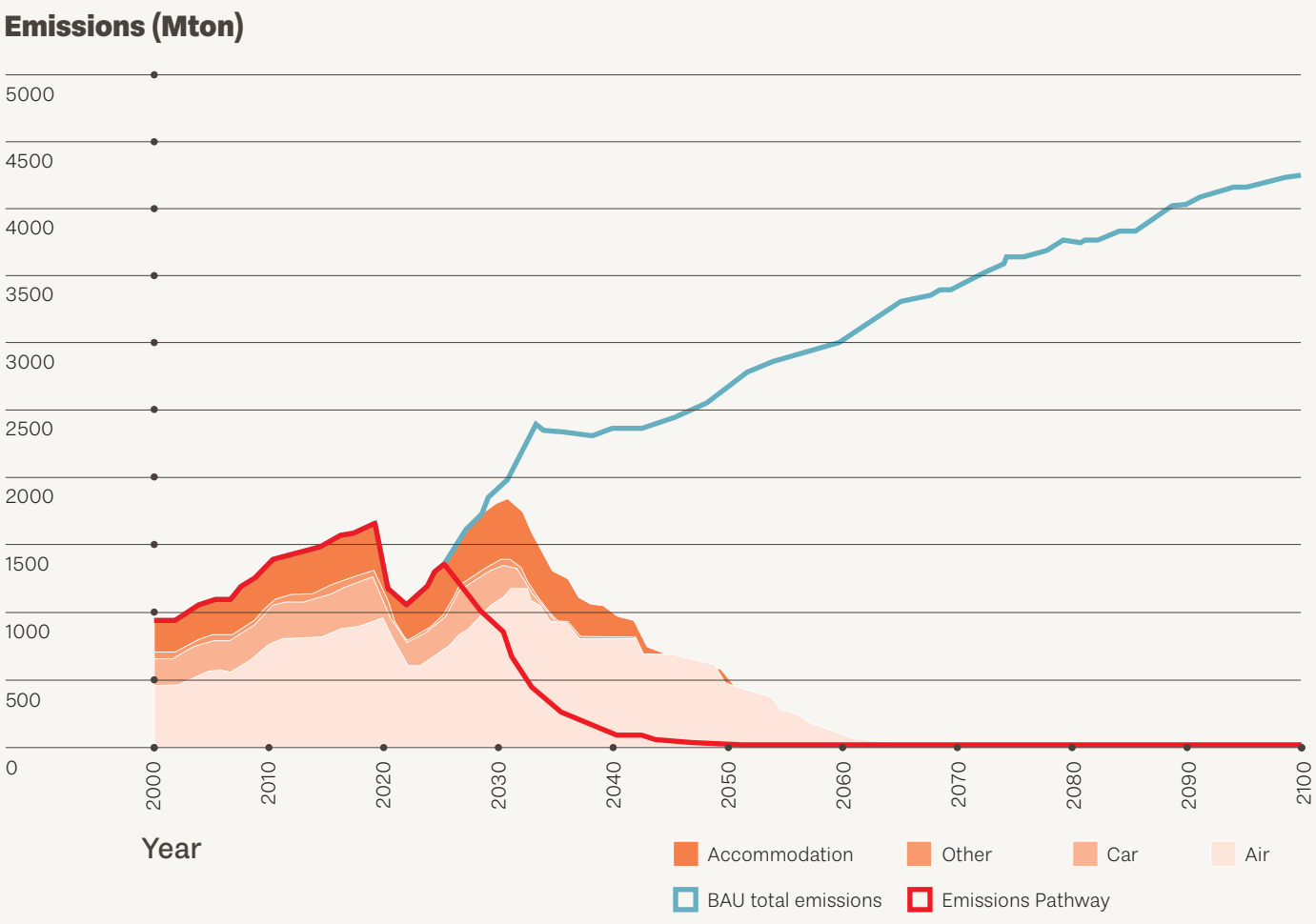
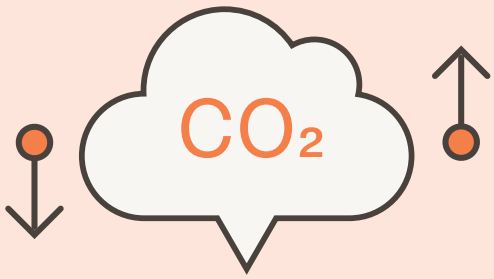


Figure 2. *Graph showing the considerable gap that remains between emissions and the decarbonisation pathway, missing the net zero 2050 target by over a decade, when all measures except limits on flight capacity are applied*

Carbon-offsetting is insufficient

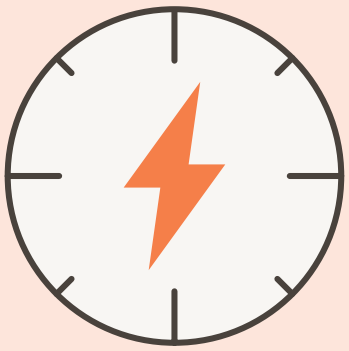


There are many concerns about the actual reductions delivered by carbon offsetting programmes. One study (Cames et al., 2016) reviewed 5,700 schemes and found that only 2% of offsetting schemes delivered the promised reductions and were "additional" to what would have happened if the scheme did not exist. The model therefore sets the default efficiency (real emissions reduction) of offsets at 20%. Also, as the world nears net zero, offsets that rely on reducing emissions elsewhere will simply become too scarce. The model assumes that only 30% of all offsets will be available for aviation.

Another issue is that many offsetting schemes aren't comprehensive. The international aviation community, through ICAO, has developed an offsetting programme called CORSIA (Carbon Offsetting and Reduction Scheme for International Aviation) which requires all airlines to offset emissions, but only above the 2019 baseline level, and excluding domestic flights (as domestic flights fall within the Paris Agreement and Nationally Determined Contributions (NDCs)). Given the climate target is to reduce emissions to half that of 2019 levels by 2030, CORSIA quickly becomes an irrelevance with barely any impact.

Ultimately offsetting may be, at best, a short-term partial stopgap for this decade, but it is not a credible longer-term solution. It is important that businesses do not depend on offsetting to achieve net zero, and many are now shifting investment from offsets to longer-term emissions reduction solutions.

Electrification and efficiencies come too late

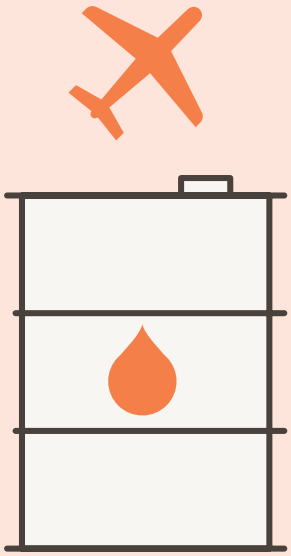


Technological advances such as improved energy efficiency and electrification of transport can eventually get travel and tourism to net zero emissions, but far too late (only by the end of the century).

The model assumes that in 2050 all electricity will be from renewables, powering almost all cars, buses and coaches, trains, ferries and accommodation. Most of these transitions will come from outside the tourism sector (for instance, the electric car revolution is not a tourism initiative), but the sector can accelerate the changes by, for example, actively investing in the electrification of accommodation, providing charging infrastructures and stimulating customer demand.

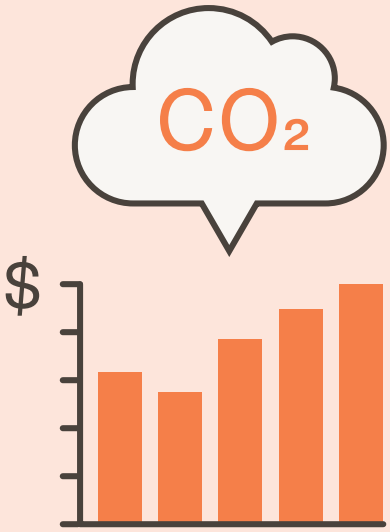
Aviation cannot electrify by 2050. The model assumes that the aircraft manufacturing sector develops hydrogen fuel cell electric aircraft with the first short-haul flights coming into service by 2035, the first medium-haul flights by 2045 and finally long-haul by 2050. But from those years onwards it will take decades to replace a global fleet.

Sustainable Aviation Fuel is available now, but availability is limited



The model explored the impact of sustainable aviation fuels (SAF), including biofuels and synthetic e-fuels. The main problem identified by the model is that supply of SAF will be limited, due to competing pressures on land use (particularly for food production) to grow biofuels, the availability of waste materials to convert into SAF, and the amount of renewable energy needed to produce "Power to Liquid" e-fuels. Demand for renewable energy will be very high across all sectors in a 1.5 degree world, which may limit the availability of SAF to cover 100% of aviation's fuel demand.

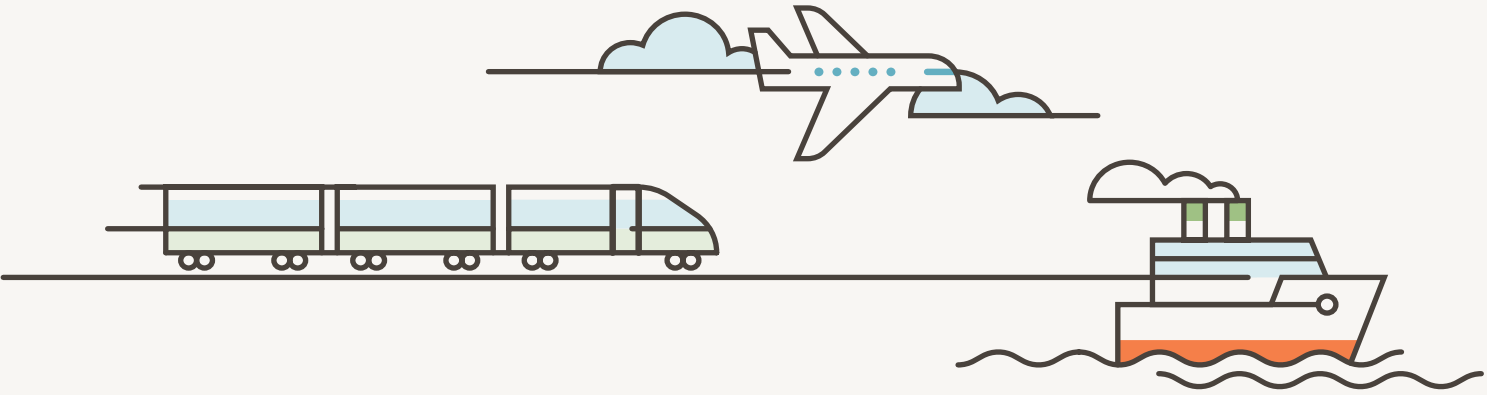
Taxation will temporarily reduce growth but will not reduce emissions to zero



The model explored the impact of various levels of taxation on the tourism sector. It found that a ticket tax only temporarily reduces growth and does not improve energy efficiency. A carbon tax will improve efficiency (by incentivising investments in less carbon-intensive activities) but this will be insufficient to counter the effect of volume growth. Ultimately, tax cannot reduce emissions to zero. Tax was also found to be of limited use to manage demand when other interventions (such as mandatory use of more expensive SAF) were already substantially increasing the overall costs of tickets.

Creating a tourism decarbonisation scenario which achieves net zero by 2050

Given the limitations of conventional measures which, even when combined at high levels, are not sufficient to deliver global net zero tourism by 2050, a further intervention was required. It is necessary to not only bring in significant investments and incentives for advancing the greenest forms of transport, but also apply limits on the most polluting. The growth in distances travelled is particularly problematic, and this growth mainly comes from air travel which cannot easily decarbonise, so it was necessary to curb the volume growth of aviation.



This is the only scenario found that can provide comparable levels of revenue and opportunities to travel in a decarbonising world.

This **Tourism Decarbonisation Scenario (TDS)** is achieved through trillion-dollar investments in all available decarbonisation measures (representing 2 or 3 percent of total tourism revenue over the same period) and prioritising trips which can reduce emissions most readily – for instance those by road and rail, and shorter distances. Some limits must also be applied to slow aviation growth until it is fully able to decarbonise, in particular capping the longest-distance trips to 2019 levels. These trips (over 16,000kms return trip, equivalent to flying from Shanghai to Sydney - or further - and back) made up just 2% of all trips in 2019 but are, by far, the most polluting. If left unchecked, they will quadruple by 2050, accounting for 41% of tourism's total emissions (up from 19% in 2019) yet still just 4% of all trips.

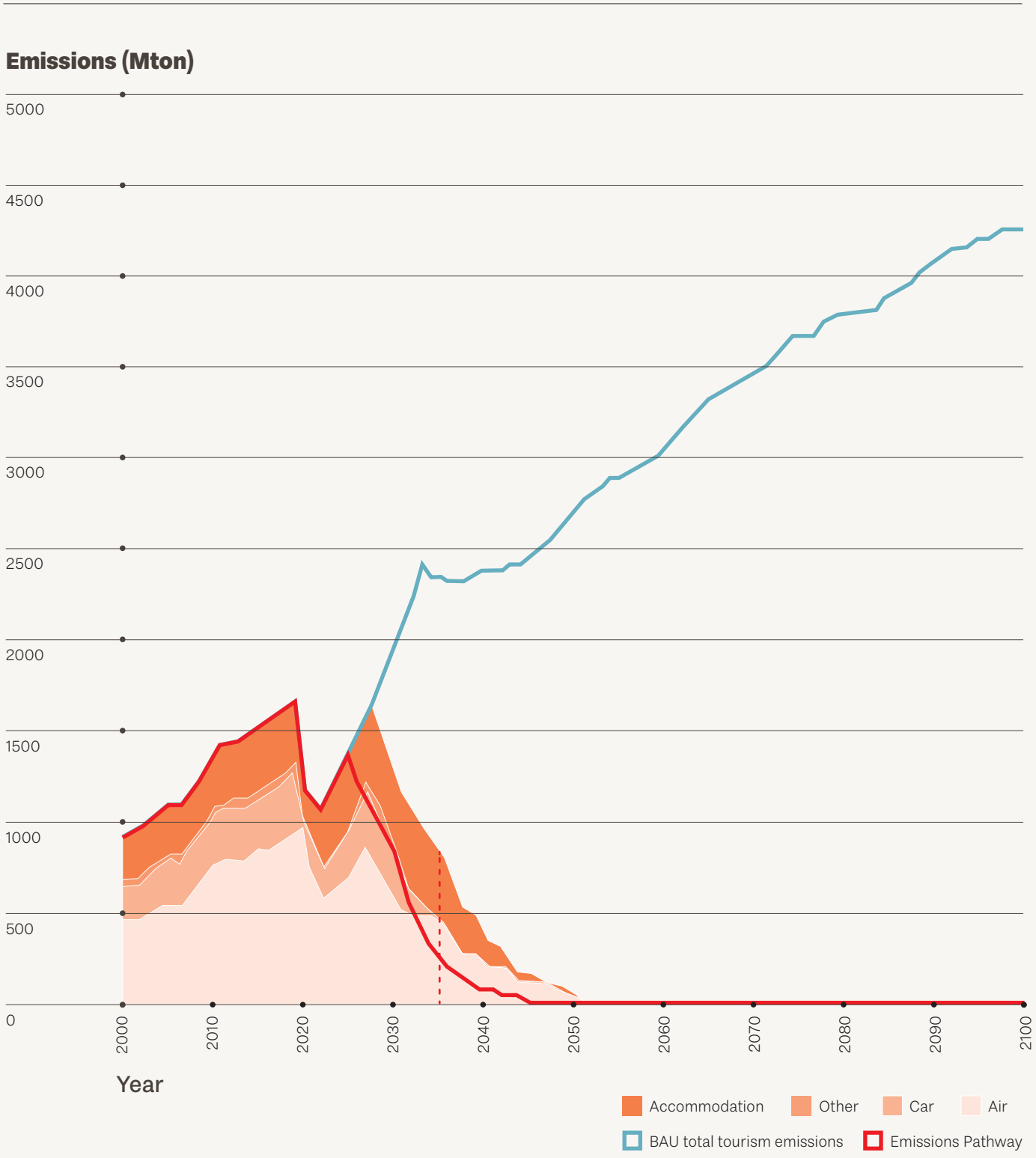


Figure 3. *Graph showing the Tourism Decarbonisation Scenario (TDS) for emissions. The dotted red line shows when emissions are reduced by 50% from 2019 levels (in spring 2036).*

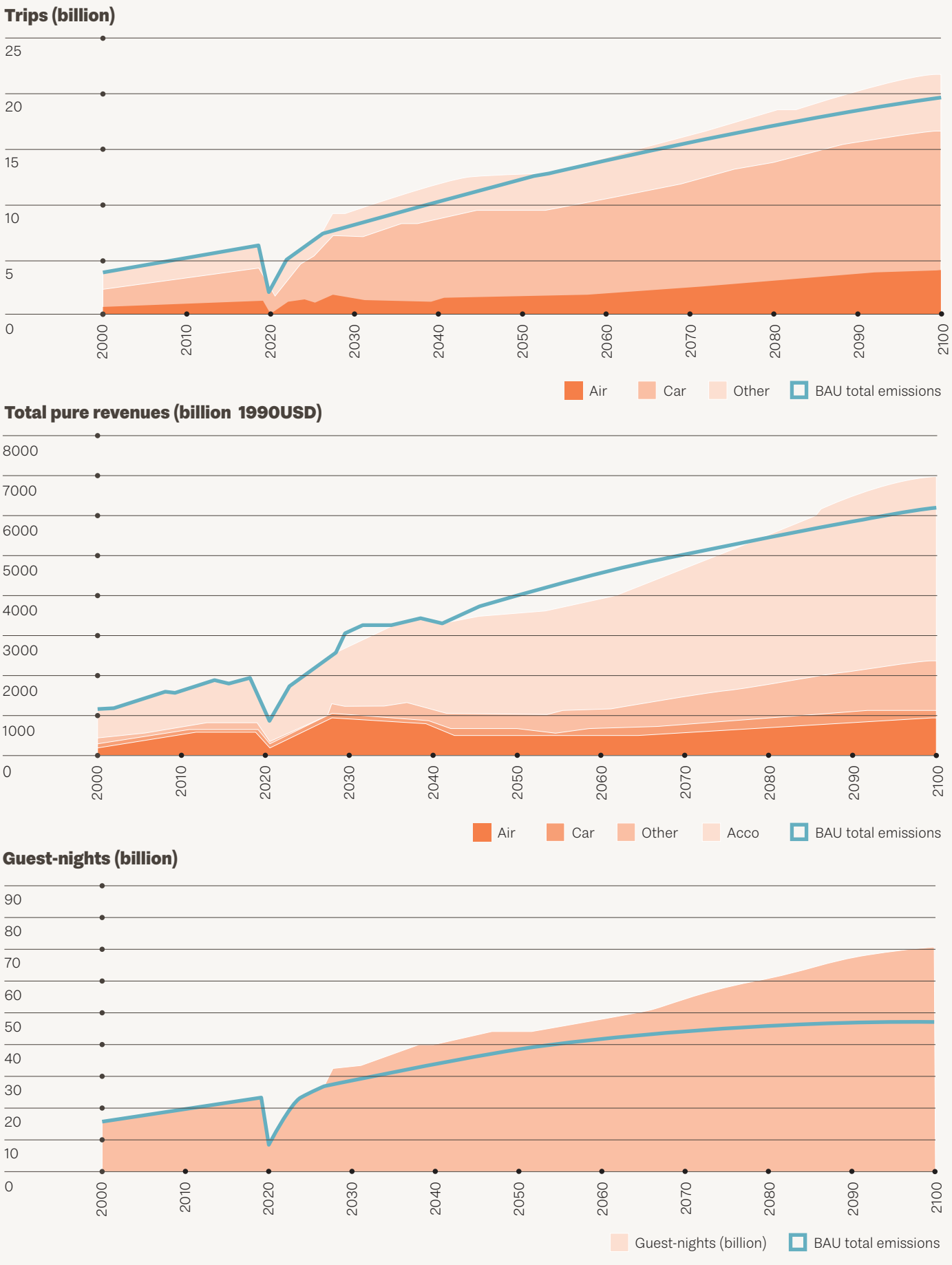


Figure 4. *Graphs showing trips, revenue and guest nights against business-as-usual (BAU).*

By combining all available measures and adding a policy of slowing the rate of growth of aviation and capping longest haul trips to 2019 levels (about 120 million return trips), we did get very close to net zero by 2050 while still not reaching a 50% reduction by 2030 – only COVID-like volume restrictions would allow for that. However, in the TDS, emissions drop sharply by 2025, reaching 50% by spring 2036. This demonstrates the need for urgency and the importance of changing the emissions trajectory in this decade to a sharp decline, rather than continuing to grow emissions and waiting until the 2040s before making reductions.

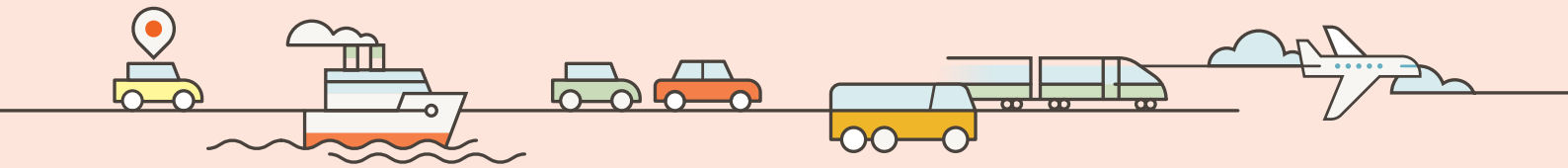
In the Tourism Decarbonisation Scenario:

- **Overall number of trips increases in line with business-as-usual (BAU) (+102% from 2019 by 2050)**
- **Total revenue also increases in line with the BAU scenario (+80% by 2050).**
- **Overall guest nights increase at a greater rate than BAU (+91% by 2050).**

How will tourism be different in the Tourism Decarbonisation Scenario?

Within the decarbonisation scenario, the shape of tourism shifts, and growth comes from different travel patterns. For instance, overall distance travelled still grows, but at half the rate of the BAU scenario. A traveller will take the same number, or more trips a year, but they will typically be travelling shorter distances. As well as flying they will use more rail, (electric) car, coach and ferry options for their holidays. Those who travel long-haul will take fewer long-distance trips but will likely stay longer. More mid to long haul trips will be taken by road and particularly by high-speed rail, where this is an option, partly making good the small loss in trips by air in these distance classes.

By 2050, in the Tourism Decarbonisation Scenario:



Short haul trips (up to 1,800km return) will grow more rapidly to become 81.5% of all trips (up from 69% in 2019).

82% of trips by 2050

69% of trips in 2019

Long haul trips (return journey over 7000km) will also grow but less quickly, and so go from being 6% of all trips in 2019, to 35% by 2050.

3.5% of trips by 2050

6% of trips in 2019

Trips away by car will increase by 155% by 2050, to become 61.6% of all trips (up from 49% in 2019). There will be some reductions to medium-haul car trips as travellers shift to other modes.

62% of trips by 2050

49% of trips in 2019

Trips by rail, coach and other public transport will increase by 76%, and represent 25.0% of all trips (slightly down from 29% in 2019, but much higher than the 18% expected for BAU in 2050).

25% of trips by 2050

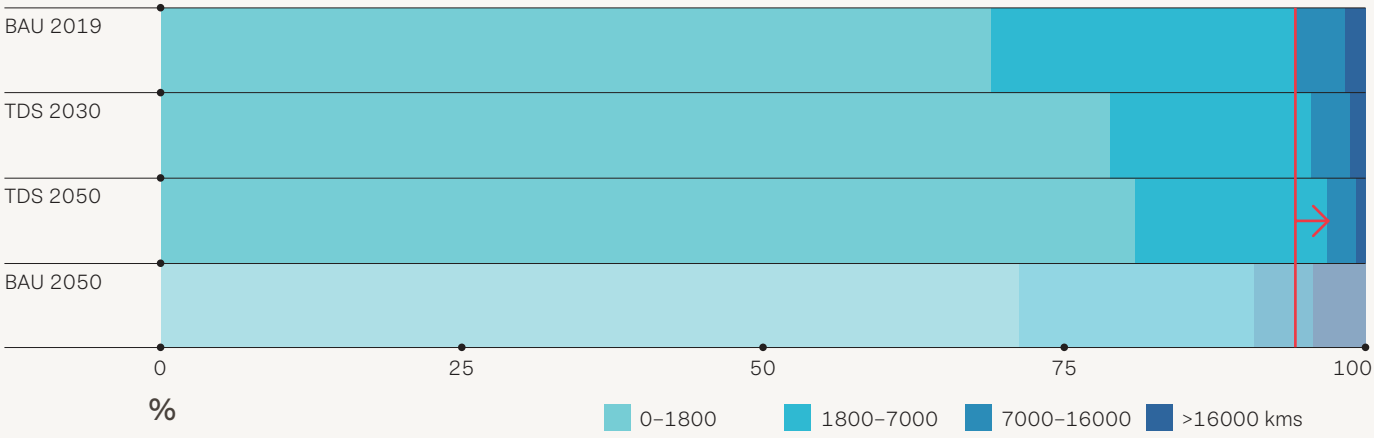
29% of trips in 2019

Trips by aviation still increase, just less rapidly when compared to BAU and other forms of transport. There will be 19% more flights in 2050 although overall distance travelled by air is kept close to 2019 levels (+2%) by curbing the number of longer haul flights. Flights become 13.4% of all trips (down from 23% in 2019).

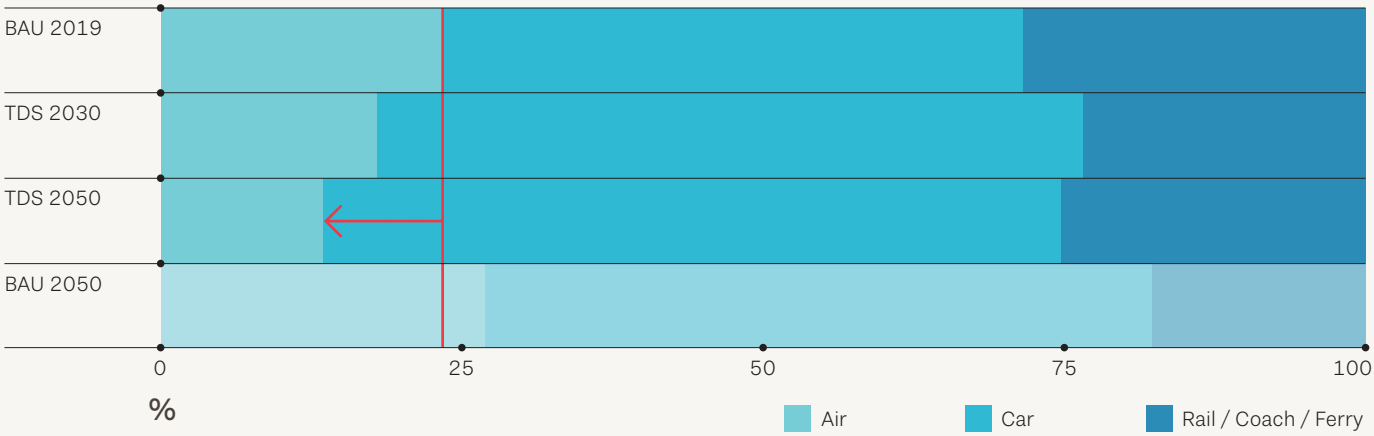
13% of trips by 2050

23% of trips in 2019

Distance travelled



Mode of transport



Duration

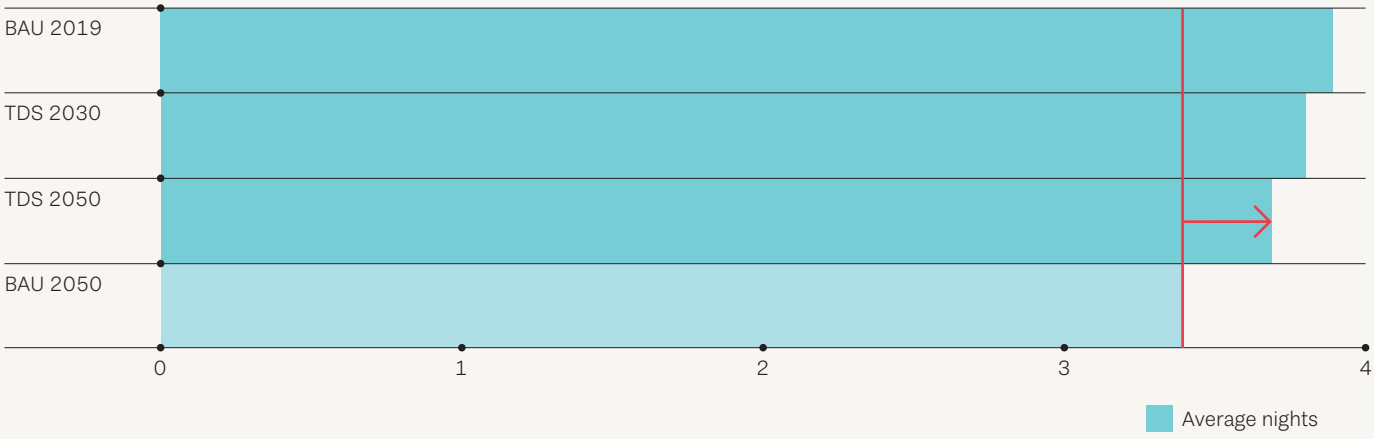
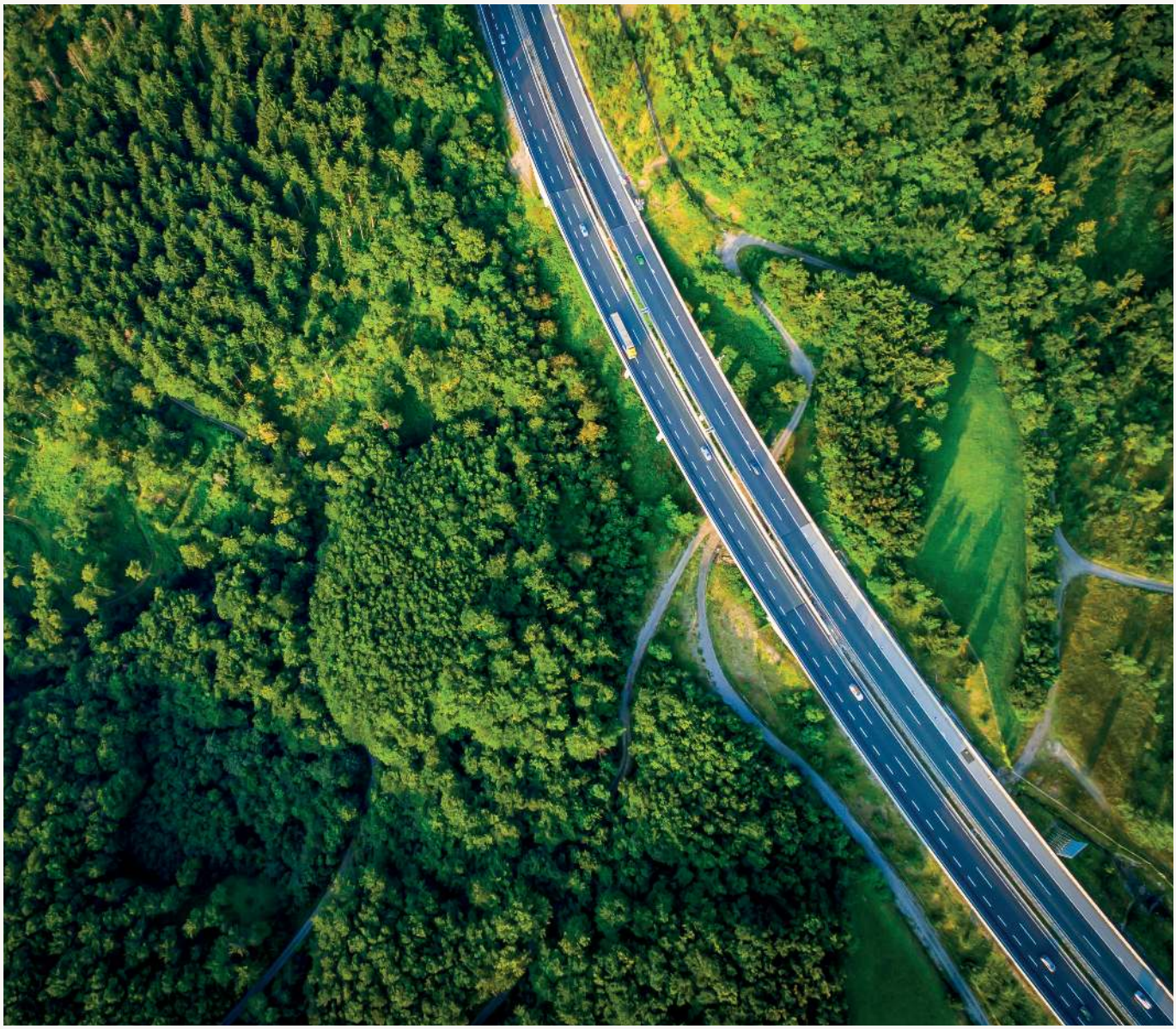


Figure 5. *Graph showing the relatively small shifts in return distance travelled, mode of transport and duration of trip, over time (2019/2030/2050) for the TDS and against business-as-usual (BAU) in 2050. The red lines demonstrate the shifts required in 2050 compared to 2019 (for distance and transport mode), and compared to BAU in 2050 (for duration).*

Although these shifts are significant, by far the majority of trips (in terms of distance travelled) in the business-as-usual scenario (85-90%) are also included in the Tourism Decarbonisation Scenario, which means that changes in tourism behaviour are relatively modest. Furthermore, in terms of trips taken, the changes are more often affecting future growth (for instance the number of flights increases, but at a slower rate) rather than losses from the current situation, which will make social acceptance easier to secure.

Social acceptance of such a scenario largely depends on the awareness and knowledge of the public related to the importance of the decarbonisation of the sector, the consequences of a potential climate crash and the availability and cost of green alternatives available to avoid such an outcome. The public should be encouraged with clear messaging that, the faster the transition is implemented, the quicker any restrictions can be lifted and the costs reduced.

Tourism stakeholders should note that attitudes and awareness are already changing. People in their twenties today have grown up with an awareness of #flightshame and #trainbragging. They will be in their 30s in 2030 and over 50 by 2050. Just as tourists ten years ago were encouraged to check that their travel provider had a responsible tourism policy, they can today be encouraged to check that their travel provider has a climate action plan aligned to global targets. This could be done with reference to the list of signatories of the Glasgow Declaration on Climate Action in tourism.

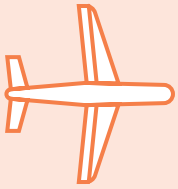


Tourism Decarbonization Scenario Interventions

To achieve the necessary shift in the shape of tourism, the following interventions were applied.

By 2030 in the Tourism Decarbonisation Scenario:

Aviation



A small amount (4%) of total aviation fuel used is Sustainable Aviation Fuel – this is a mandatory requirement. While biofuel SAF is currently being used in very small quantities, we don't recommend expanding biofuels because of the significant issues already highlighted (limited availability and competing land and energy priorities etc.) Instead, we favour long-term investment in e-fuels.

There is no impact from the CORSIA offsetting scheme as emissions are below the 2019 baseline. No additional offsetting has been added.

Plane tickets are two-thirds more expensive (+67%) than 2019 levels in real terms, due to a temporary tax that helps to generate the investments in new technology R&D, updating fleets, generating subsidies for rail and bus and developing the production capacity for the more expensive e-fuels. It was therefore not necessary to apply further ticket or carbon taxes, as these did not contribute to emissions reductions.

Limits placed on airport capacity still allow for 19% growth in the number of flights compared to 2019. However, there are fewer long-haul flights which means overall passenger-kilometres travelled by air increases by only 2%. This restriction is necessary because of the limited availability of e-fuels.

Car

22% of cars are now electric (up from 1% in 2019), requiring significant investment in charging infrastructure. 33% of electricity is from renewable sources.

Car energy efficiency is 18% more efficient than in 2019.

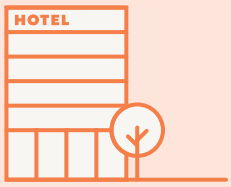
Rail and other transport

There is significant investment in rail, with 3 times the length of high-speed track compared to 2019, and an increase in electrification. 66% of rail kilometres travelled are powered by electricity, compared to 50% in 2019.

Rail and other transport are assumed to be 12% more energy efficient than in 2019.

A 40% subsidy on rail tickets which allows train travel to be about one-third cheaper compared to 2019, in real terms.

Accommodation



83% of accommodation is electric, up from 50% in 2019, requiring significant investment in on-grid and off-grid infrastructure. 33% of global electricity from the grid is assumed to be from renewable sources.

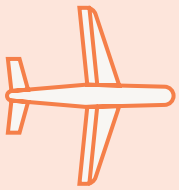
Accommodation is assumed to be 12% more energy efficient than in 2019, through various energy-saving initiatives to buildings and operations.

Although not part of the model, we note that accommodation must also reduce its scope 3 emissions (supply chain impacts) as well as scope 1 and 2 emissions.

Slowing the trend in increasingly shorter-length stays will benefit the accommodation sector, averaging 3.95 nights away per trip, compared to 3.70 under BAU.

By 2050 in the Tourism Decarbonisation Scenario:

Aviation



Limits on airport capacity reduce the number of flights by 48% compared to BAU (though this is still an increase of 19% on 2019 levels).

Nearly all jet engine flights (99%) are now powered by e-fuels.

In addition, a small number of aircraft (4% capacity) are fuel cell electric, and 65% of all aircraft on order are electric. It will take many more decades to replace the world's entire fleet with electric craft, but as this happens, airport slots can increase again.

There is no offsetting.

Plane tickets are around three-times the cost (+200%) when compared to 2019 and BAU in real terms. As with 2030, no additional taxes are necessary.

Car

100% of cars are now electric (up from 1% in 2019), requiring significant investment in charging infrastructure. 99% of electricity is from enewable sources.

Rail and other transport

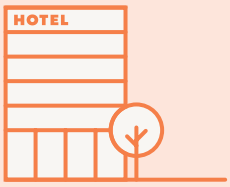
Rail investment continues, now with over 10x the high-speed network compared to 2019.

The 40% ticket subsidy for rail continues and means tickets are less than half the cost of 2019, in real terms.

Nearly all transport in this category is electric (96%) with virtually zero emissions from renewable sources.

Rail, coaches, ferries, "other" transport is 47% more energy efficient than in 2019.

Accommodation



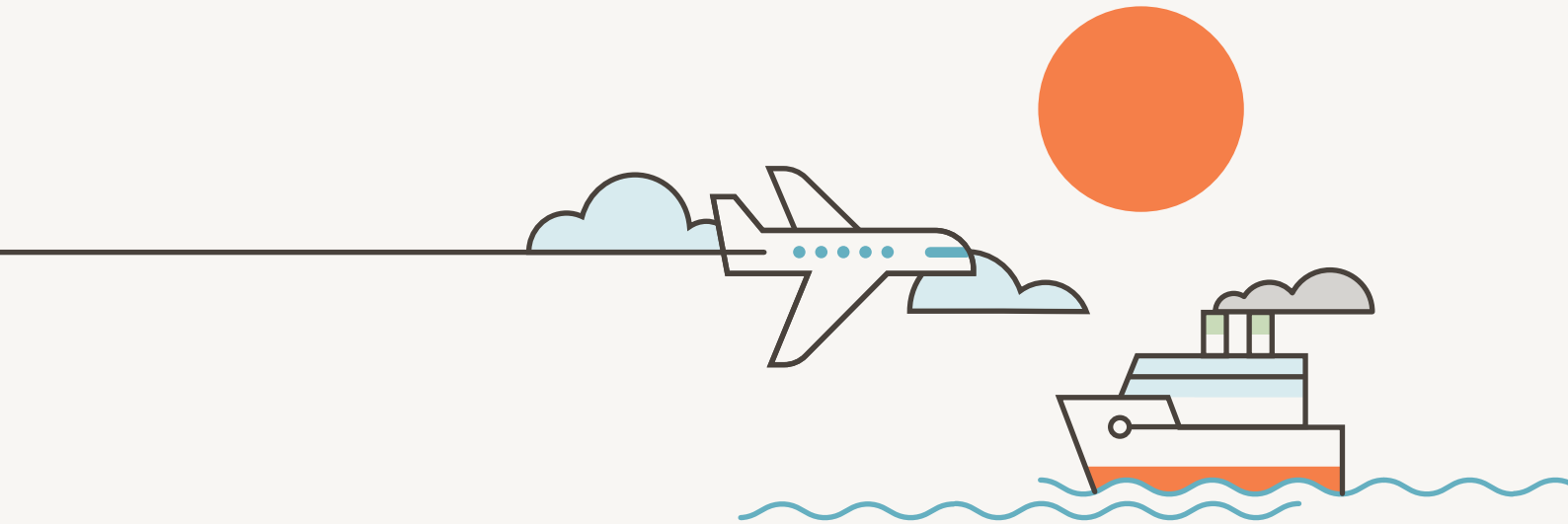
99% of accommodation is now electric, with virtually zero emissions from renewable sources.

Accommodation is 47% more energy efficient than in 2019.

Although not part of the model, we note that accommodation must also reduce its scope 3 emissions (supply chain impacts) as well as scope 1 and 2 emissions.

The average trip duration is 3.73 nights away per trip, compared to 3.37 under BAU.

Considering equity



A major consideration of the Tourism Decarbonisation Scenario is how to ensure equity and fairness in the way that it is applied. The model used is for the global travel and tourism system, and does not provide estimates at a regional or national level. Of course, it should not necessarily be the case that the TDS is applied in the same way for every traveller and in every place around the world. For example, motivations to travel are different, and policymakers may want to recognise differences between business travel, visiting friends and family, and leisure. Furthermore, a small number of frequent fliers, less than 1% of the global population, account for 50% of commercial aviation emissions (Gossling et al., 2020). And crucially, all destinations are different:

- **Some destinations do not have well-established existing infrastructure such as rail track and/or have fewer resources to invest in developing green infrastructure and technology.**
- **Some, such as island nations, are more dependent on long haul visitors and have fewer options for alternative greener transportation.**
- **Some communities have contributed very little to climate change, but are suffering the most from its impacts.**
- **Some have reached their capacity for visitor growth, whereas others are still developing their tourism economies.**

The majority of the tourism sector carbon footprint is exerted by, and in, high-income countries. Approximately 50% of the global total footprint is caused by travel between countries with a per capita GDP of more than US$25,000. (Lenzen et al., 2018).

The highest number of international outbound tourist departures are registered in Europe and North America. Likewise, the highest number of air transport passengers come from high- and middle-income countries that are predominantly located in developed regions. These passengers live in countries with the highest overall carbon footprint and are responsible for most of the transport related CO_2 emissions. However, the countries that will suffer most from the impacts of climate change are the low and lower-middle income countries, the ones that have the smallest carbon footprint. Many of these countries tend to be heavily dependent on tourism revenue.

The chart below shows the global climate risk for tourism. Small island developing states (SIDS), where the contribution of travel and tourism to national GDP is the highest, are among the most vulnerable to climate change.

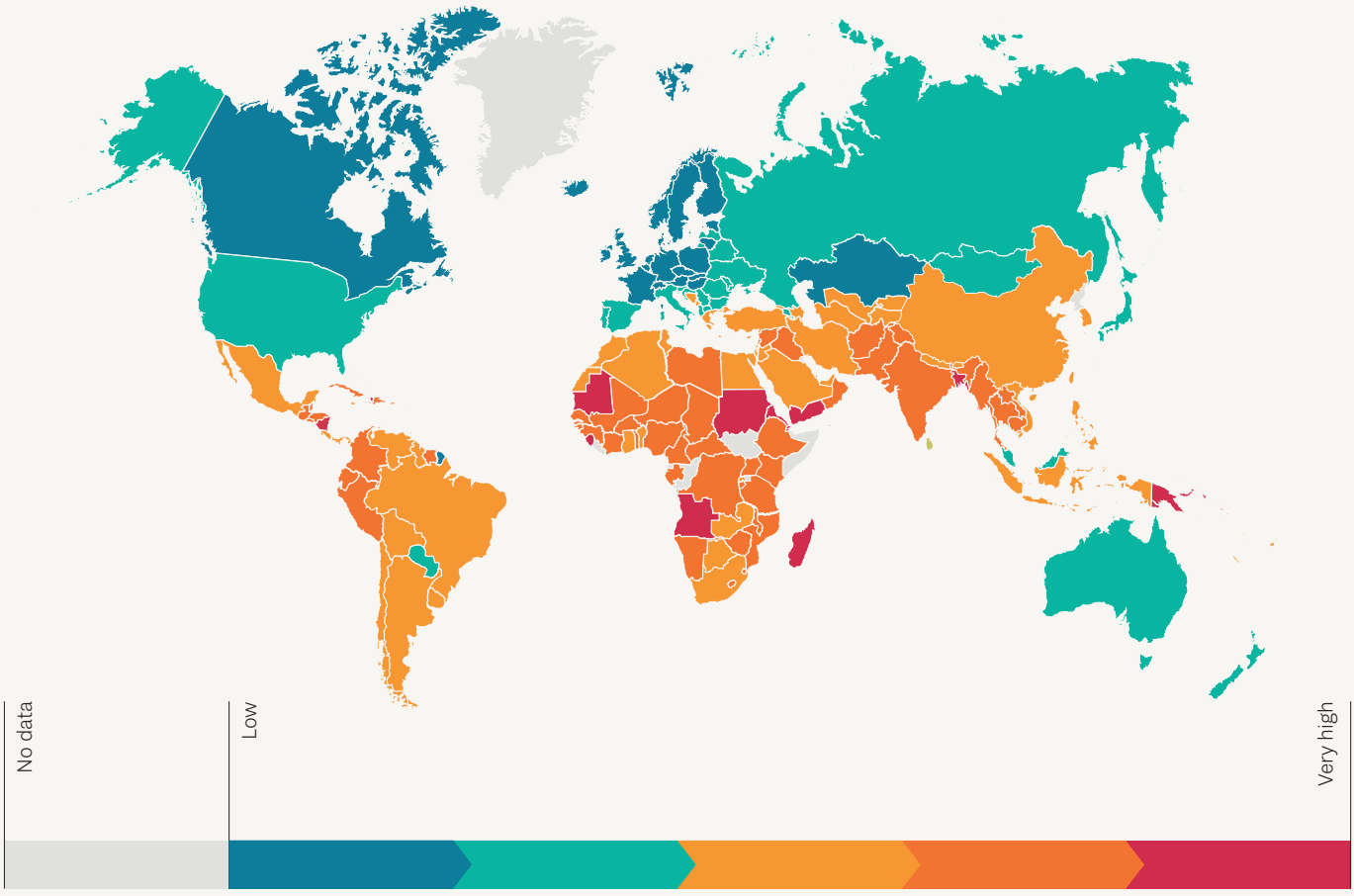


Figure 6. *Map showing climate change risks for tourism, taken from European Travel Commission/Scott and Gossling, 2018)*

This represents a paradox. While tourism is a key driver of socioeconomic development in these destinations, the dependence on long-haul travel and aviation contributes significantly to climate change.

Consideration of equity needs to be a priority for global discussions in the drive to net zero, but should not be an argument to stop mitigation, because non-mitigated climate change has disastrous impacts particularly on low and medium income countries. The global tourism system can instead support these destinations to adapt and exploit newly emerging low carbon opportunities.

Perspective:

Intrepid Travel

For the first time, the Envisioning Tourism in 2030 report provides a vision for how global travel and tourism could reach a net zero future. It also tells us how the shape of tourism needs to change. Importantly, the research shows that there is only one plausible way for tourism to maintain growth, and simultaneously decarbonise.

The report's decarbonization scenario challenges all tour operators to think carefully and move faster on decarbonizing our businesses. In many cases that will mean reimagining business models and approaches entirely. Intrepid is already the first global tour operator with science-based carbon emissions targets and we're working to reduce transport emissions; strengthen our domestic and regional travel offering; and promote longer trips in destinations that require long-haul flights.

Our supply chain represents more than 80 per cent of our overall Scope 3 emissions, with a large portion accounted for in transportation. Decarbonizing our supply chain – specifically transportation – relies on availability of electrical vehicles and high-speed ground transport. That, in turn, depends on different players, including governments, prioritising the phasing out of fossil fuels in favour of clean technologies.

This is not going to be easy and no business can act alone, or simply ignore what needs to be done. Change requires all of us to work together and climate action has to happen at all levels.

Dr Susanne Etti,
Global Environmental Impact Manager

Perspective:

Destination Vancouver

The Envisioning Tourism in 2030 report is challenging destinations to consider their role, as part of the broader tourism and travel system and the emissions associated with travel to the destination.

The decarbonization scenario challenges destinations to connect much more closely with their neighbours. For Vancouver this means our neighbouring US cities of Seattle, Portland, and Spokane, precisely the destinations that would be connected to Vancouver if a planned future high-speed rail project is built. Destinations will need to collaborate and become champions of enabling developments like these and advocating for timelines that match the 2030 and 2050 climate goals.

The future of carbon accounting for destinations will have to come to terms with the concept of advertised emissions. This is defined as the uplift in greenhouse gas (GHG) emissions that are attributed to the increase in sales generated by advertising. In June 2022 the concept was adopted as Leadership Practice by the UNFCCC Race to Zero. What the findings in this Envisioning Tourism in 2030 report challenge us to do is develop a methodology to systematically identify and incorporate the carbon emissions into our marketing and development business plans as destinations.

Gwendal Castellan,
Sustainable Destination Development

3

Conclusions and recommendations

What does this mean for tourism policymakers and industry decisionmakers now?

With travel and tourism set to continue growing apace amidst a deepening climate emergency, we are at a fork in the road, with two distinct options ahead: decouple tourism from emissions, by doing all that is possible to bring about net zero trips and prioritise these over the most polluting trips, or accept the need to curb the global tourism system as a whole. The second option is not just worse for individuals who wish to see the world, but for the destinations and businesses that are currently dependent on international visitation and wish to use it as a tool for sustainable development.

A third scenario, to continue with business as usual and fall far short of emissions targets, is not an option to be seriously entertained. As various IPCC reports have consistently shown, climate change is already causing dangerous and widespread disruption and is harming the lives of millions of people around the world, despite efforts to reduce the risks. Even with global warming limited to 1.5 degrees centigrade, as aligned with our decarbonisation scenario, we face unavoidable multiple climate-related hazards now and over the coming decades. The costs of mitigation and adaptation are already on the balance sheets for businesses and governments, but they will be much greater in a world that heats by 2 degrees or more. If temperatures reach the limits of human survivability, as predicted under high emissions scenarios, tourism in many places will effectively become impossible and an irrelevance. Furthermore, with the majority of other sectors now getting on track to zero-emissions, political and economic roadblocks will emerge, for instance because of higher cost for capital and stronger regulation being implemented.

Tourism is particularly exposed to climate risks, often sited in vulnerable locations such as coastlines and mountains. Highest vulnerability exists in regions where tourism growth is expected to be the strongest (Scott et al., 2019) with risk hotspots for tourism found in Africa, the Middle East, South Asia and island nations in the Caribbean as well as Indian and Pacific Oceans. However, damage is already being felt everywhere - with worsening droughts and heatwaves, floods and wildfires, snow melt and changes in seasonality, and landscape quality and biodiversity loss.

The fact that this report found only one growth scenario compatible with current climate targets should help focus minds on taking the actions necessary. We know what is technically possible, but until now we have lacked the will to make it a reality. We estimate that the investment required for this scenario is several trillion US dollars, but that's no more than 2 or 3 percent of total tourism revenue over the same period. And note this is an investment - with an expected return - not simply a cost to be absorbed. Those who invest now will help to

reshape tourism and reap the benefits in the future.

The scientific community has made it clear, and the world has signed on through mechanisms like the Paris Agreement, that we must at least come close to halving emissions by the end of this decade, and reach net zero as soon as possible before 2050. For the Tourism Decarbonisation Scenario (TDS) we used the following levers:

Mandated use of e-fuels for aviation up to 100% in 2050 and respecting fair shares availability of renewable energy sources.

Investment in electrification of transport and accommodation, alongside massively acquiring/developing renewable energy.

Investment in technology and infrastructure (e.g. hydrogen and fuel cell aircraft, high speed rail).

Subsidies on ticket prices for sustainable travel modes.

Some limits on aviation growth including capping long-haul flights to 2019 levels until zero-emissions aircraft take over the skies.

We also recognise the omission of cruise and scope 3 supply chain emissions in our modelling. Cruises are currently a small part of the tourism system (and less than 1% of direct emissions), but in general (with some river and sailing cruises providing notable exceptions) they have an extremely high individual footprint which is not at all compatible with the Tourism Decarbonisation Scenario. Similarly, scope 3 supply chain emissions are certainly significant for many tour operators and accommodation providers. However, most of these emissions will be captured within the UNFCCC policy framework, through Nationally Determined Contributions (NDCs), and will benefit from the same developments towards renewables and electrification required for the TDS.

Our intention is not to prescribe the specific detail of the future scenario, but to indicate the direction that travel and tourism needs to take. The shape of travel needs to change in favour of the rail and electric cars growth markets, closer-proximity destinations, and longer stays. There are many detailed policy or technical recommendations that are needed to bring about the interventions within the decarbonisation scenario, and we recognise that others are better placed to begin or continue those discussions, from within the corresponding sectors such as transport, construction and energy. To secure its future, the Travel & Tourism sector should strongly advocate for all the above measures to be put in place. Tourism needs to bring different industry sectors together as one voice and to be better represented in global initiatives such as climate finance discussions.

This entire effort also comes with a warning - particularly for those managing destinations and planning for the future. That future is increasingly uncertain and typical economic growth patterns are just as likely to face disruption as the increasingly destabilised weather patterns. The single scenario we've outlined represents unprecedented mobilisation of resources and action, at a time when increasingly challenging geopolitical, economic, humanitarian and environmental pressures may unfortunately frustrate such efforts. Suffice to say, the need for adaptation and significantly increased resilience should not be overshadowed.

We conclude here that, even maximised as they must be, we cannot simply rely on technology, SAF and offsetting schemes, then continue along with business as usual. Technology arrives far too late, SAF has serious resource constraints, and offsetting is inadequate and unreliable. Therefore, the following recommendations focus on the role of global and national policymakers (for instance: ICAO, UNFCCC, UNWTO, World Bank, national governments), destination-level (for instance: Destination Management Organisations, local authorities and equivalent governance units), and private sector businesses in destinations (for instance: accommodations, local transport, attractions) and tour operators/online travel agents (OTAs) **to reshape the global travel and tourism system.**

Ensure greenhouse gases from travel to/from destinations are fully accounted for, to provide the right incentives to reduce emissions.

1/ Global / National policymakers
2/ Destination level governance
3/ Private sector

Incentivising international transport emissions reductions	1	2	3
Ensure those significant travel and tourism emissions currently excluded from national carbon budgets (specifically international cruise and aviation) are brought under decarbonisation legislation. A suitable framework for this already exists, based on the Nationally Determined Contributions (NDCs) reporting mechanism under the Paris Agreement.	✓		
Consideration should be made as to whether destination countries should receive the additional carbon budget from international transport emissions currently excluded. This would allow destinations to set their own priorities, e.g. prioritising tourism over other industries if they wish. But cooperation and agreements with source markets would be necessary to ensure fair responsibility and action is placed on those nations "consuming" the tourism product.	✓		
Ensure mechanisms, such as carbon pricing or regulation, are in place to recognise the cost of greenhouse gas pollution and enable better decision making on carbon budget trade-offs and investments in decarbonised products and mitigation efforts.	✓		
Ensure incentives for frequent flying are removed, such as frequent flyer loyalty schemes.	✓		✓

Measurement, reporting and transparency	1	2	3
Agree an approach to consistently measure, share and report on all travel and tourism's direct emissions data at global, national, destination and business levels	✓	✓	✓
Tourism is defined by travel away from home. Therefore all emissions from travel to/from the destination must be accounted for in national, destination and business strategies and climate action plans. Consideration should be made for "advertised emissions", where promotional activity creates a driver for increased CO_2.	✓	✓	✓
Use the framework of the Glasgow Declaration on Climate Action in Tourism as a platform for transparency and to ensure a coordinated and consistent approach.	✓	✓	✓

Formulate a coordinated climate action "masterplan" (long term planning & investment) for travel and tourism

1/ Global / National policymakers
2/ Destination level governance
3/ Private sector

Independent global taskforce & masterplan	1	2	3
Create an independent, globally representative taskforce to set international policy around tourism and climate action.	✓		
Develop a coordinated international plan for optimising tourism's growth and distribution flows in a way that is compatible with climate targets.	✓		
Give due consideration to destinations that are most dependent on tourism, particularly long haul, and give priority for tourism growth to least developed visitor economies.	✓		
Ensure capacity growth of transport infrastructure (particularly airport and cruise port construction/ expansion) is compatible with climate targets and destination capacity limits and equitably distributed. A global airport capacity distribution scheme is needed in conjunction with bringing international aviation within the NDCs process.	✓		
Enforce the development of zero-emission aircraft through ICAO's existing CO_2 standard.	✓		

Aligned international, national, business and destination plans	1	2	3
Ensure place-based master plans are developed and urgently implemented within national frameworks, and destination management plans align with (or are part of) these.	✓	✓	
Ensure climate targets are always included in business and destination plans, which complement existing climate goals/commitments outside of tourism, and broader national and international targets.		✓	✓
Develop plans which acknowledge the future shape of tourism in a destination is likely to differ from the present, building resilience by diversifying with changes in source markets, type of visitor, length of stay etc. and planning for a potential increase in local/domestic visitation, including for the pressures this may bring to vulnerable spaces and the need to manage shifting visitor flows.		✓	✓
Pay particular attention to reducing destination dependency on high volumes of long-haul markets, by shifting towards medium and short haul ones and towards more sustainable modes of transport.		✓	✓
Use the framework of the Glasgow Declaration on Climate Action in Tourism to facilitate alignment and collaboration.	✓	✓	✓

1/ Global / National policymakers
2/ Destination level governance
3/ Private sector

Influencing other sectors	1	2	3
Travel & Tourism should strongly advocate to the relevant sectors (transport, energy, construction and city planning etc) for all the measures outlined in the decarbonisation scenario to be put in place urgently and at scale.	✓		
Tourism needs to bring disparate industry players together as one voice and to be better represented in global initiatives such as climate finance discussions.	✓		
Strengthen the governance of destination management, with oversight and influence on anticipated changes in transport and energy infrastructures, accommodation development, and the capacities of routes to/from the destination (airports, cruise ports, road and rail networks etc).	✓		

Investment and enabling environment	1	2	3
Refer to the Tourism Decarbonisation Scenario, including tourism forecasting information, when developing and applying green taxonomy frameworks for sustainable investments.	✓		
Prioritise international transport routes and national transport and energy infrastructure needs which will have the greatest decarbonisation impact and return on investment for tourism.	✓		
Shift development funds and investment programmes to support growth in green infrastructure and decarbonised tourism. Make climate finance easy to access and equitable and facilitate collaborative business investments.	✓	✓	✓
Coordinate and participate in precompetitive collaboration on shared infrastructure and supply chain decarbonisation initiatives. Such initiatives will benefit a wide range of businesses and stakeholders, and yet require coordination and the right enabling environment to be initiated.		✓	✓
Ensure a long-term plan is in place for recruiting, training and upskilling the workforce of the future.	✓	✓	✓

Start identifying and providing low and net-zero tourism options

1/ Global / National policymakers
2/ Destination level governance
3/ Private sector

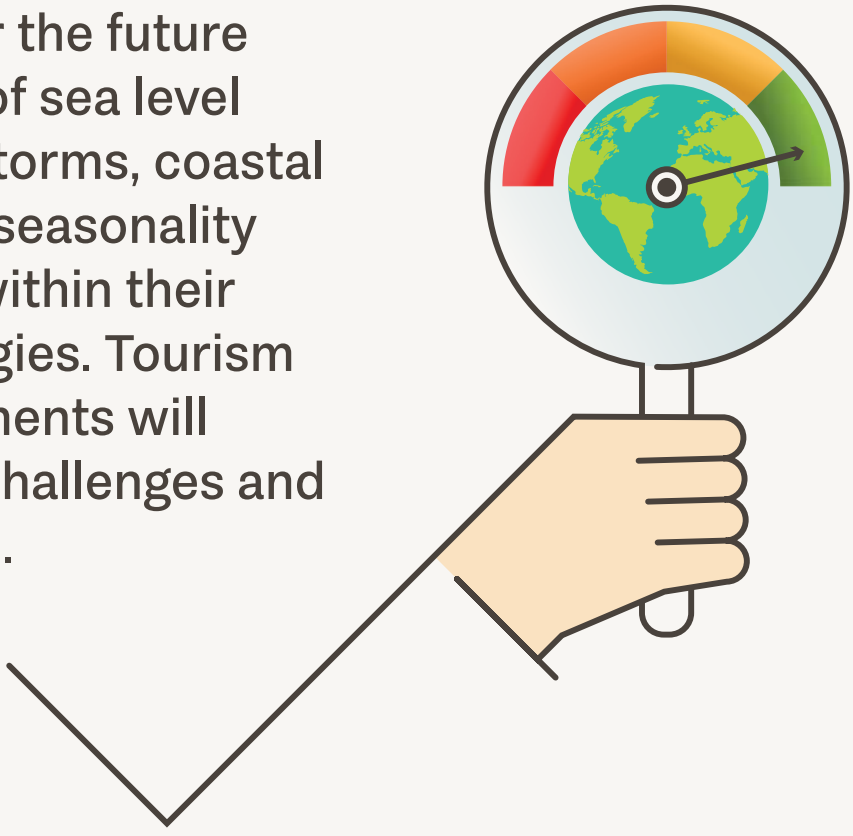
Product development	1	2	3
Bring integrated carbon management into product development, factoring-in the carbon footprints of customers/markets and products, and optimising carbon in terms of CO_2 budget spent against revenues received.		✓	✓
Bring to market, as soon as possible and certainly within this decade, close-to-zero carbon experiences, accommodation and package holiday options.		✓	✓
Review existing product portfolios and itineraries to facilitate change. Focus on increasing the value (economic or otherwise) of tourism rather than increasing volume. New product and itinerary development should incorporate regenerative and adaptation solutions and investment in local businesses and communities.		✓	✓
Incentivise longer stays to grow value without growing emissions to/from the destination, and reduce economic leakage (e.g. from imported goods to service visitor demand).		✓	✓
Encourage innovation to facilitate tourism's transition. For instance, new booking platforms which support multi-stop, multi-modal trips and solutions to last mile challenges, or package holidays which charter trains or book whole carriages.			✓
Stimulate demand for decarbonised solutions through coordinated purchasing power (for instance, hotels providing demand for district heating networks) and communication out to supply chain businesses.			✓

Marketing and communication	1	2	3
Factor in carbon when identifying the most valuable/desirable source markets. Target customers that can reach the destination through lower carbon routes, and develop the destination product offering accordingly.		✓	✓
Develop carbon labelling for products based on a standard methodology, allowing fair comparisons both for B2B buyers and end consumers.	✓	✓	✓
Use choice editing and behaviour economics "nudges" to match customers with the lowest carbon products that meet their requirement.			✓
Stimulate consumer demand for more sustainable and green options.			✓

Better understand and plan for how tourism will operate in a decarbonised, 1.5 degree world

Surprisingly little is known about the current and future global impact of climate change on tourism. With tourism set to double in size by 2050, with an associated increase in coastal development and land use, and the escalating risks from climate change, the failure to account for climate-related risk leaves many tourism businesses, investors and local workforces around the world vulnerable. For instance, in the Caribbean, 29% of tourism's facilities are at risk of inundation with 1 metre of sea level rise. But estimates do not exist on the total global, or even regional, values of tourism resort infrastructure at risk due to climate change - crucial missing figures (Epler Wood et al., 2019). So we can only tell part of the story in this report, describing the necessary changes to transform tourism into a zero carbon economy.

Businesses and destinations also need to plan for the future escalating impacts of sea level rise, high intensity storms, coastal erosion, changes in seasonality and other impacts within their development strategies. Tourism climate risk assessments will identify significant challenges and opportunities ahead.



Sign and implement the Glasgow Declaration

All of the above recommendations require collaboration and alignment at the global, national, regional and business levels, with ever-increasing action and ambition.

All stakeholders in the tourism sector are therefore urged to sign and implement the **Glasgow Declaration for Climate Action**, as the global framework for climate action under the pathways of measure, decarbonize, collaborate, regenerate and finance.

All travel stakeholders are urged to review their sector and individual climate action plans in light of the new recommendations above. Those parts of the industry which can decarbonize fastest are encouraged to accelerate their plans to address the barriers and opportunities presented in this report.

Perspective:

Iberostar Group

Iberostar Hotels and Resorts has nearly 80% of its all-inclusive resorts beachfront over 100 locations mostly in the Caribbean and Mediterranean. Iberostar has identified exposure to climate change as its primary business risk, seen through damages from hurricanes, beach loss and degradation of coastal ecosystems.

In 2020, Iberostar announced it would reach Carbon Neutrality by 2030. Iberostar acknowledges its ambition requires unprecedented public-private partnerships and industry collaboration. For example, to decarbonize 85% of its Scope 1 & 2 by 2030, Iberostar will need to work with local governments and energy providers to add up to 220 MW of new renewable energy in its destinations. Or to halve emissions from its purchased goods and services, it requires aggregated purchasing power to influence its supply chain in hard-to-abate sectors.

In the context of Envisioning Tourism 2030, Iberostar showcases an example of accommodation that has a strategy core to its business model that will halve emissions by 2030 and reach Net Zero by 2050, if not well before. This study models 83% of accommodation must be electric by 2030. Iberostar will be on average 90% electric. Accommodation is assumed to be 12% more efficient. Iberostar aims to be 35%.

Envisioning Tourism 2030 further emphasizes the need to consider travel more holistically, requiring more dialogue between the sub-sectors that make up the traveler journey. In order to increase stays or alter modes of transportation to destinations, businesses will need to collaborate in platforms that either don't exist or are currently limited in fostering cross-sector dialogue. In order to ensure equity can translate to business decisions, there must be a platform for the sector and its destinations to speak and be heard.

Megan Morikawa,
Global Director of Sustainability Office

Perspective:

Visit Barbados

Barbados fully supports and embraces the "Envisioning Tourism 2030" report and stresses the importance of the vital document for the travel and tourism industry to have a roadmap for a path toward a sustainable and net zero future. Decarbonization is critical, especially for small island developing states, as our Prime Minister, the Hon. Mia Mottley has articulated on the world stage.

Tourism destination management has significant importance in controlling many impacts of tourism, as well as ensuring the sector's success, thus ensuring its sustainability. The impact of a well-managed tourism destination can provide essential benefits. Conversely, poor management can have a severe impact on ecosystems, economic stability, and overconsumption of resources and can contribute to the loss of cultural integrity and identity of the destination.

The Barbados Tourism Marketing Inc. (BTMI) is undertaking a series of initiatives to develop a more sustainable and responsible tourism industry in Barbados. Understanding that Barbados remains on the frontline of the climate crisis and, as a tourism-dependent economy premised heavily on its natural assets, ensuring that efforts are prioritized to build resilience is paramount. As such, the BTMI is working hard to accelerate the decarbonization of the island's tourism operations as we work towards the national goal of becoming carbon neutral by 2030 and was one of only three destinations in Central & Latin America (and the only destination in the Caribbean) to be recognised in the Top 100 Green Destination list for 2022.

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