WORLD TRAVEL & TOURISM COUNCIL

A NET ZERO ROADMAP FOR TRAVEL & TOURISM

Proposing a new Target Framework for the Travel & Tourism Sector

UN environment programme 50 1972-2022

United Nations Framework Convention on Climate Change

NOVEMBER 2021

FOREWORD

Climate change is here and worsening at an alarming pace. COVID-19 helped raise awareness of the connection between nature and the health of our people and planet, also providing us with an opportunity to reset how we do business. Yet, **urgent action must be taken now to avoid a devastating impact on our businesses, the global economy, and our ways of life.**

Unlike COVID-19, climate change is a threat that we can clearly see coming and ultimately a peril to our very existence. We must heed this warning and work together to design destinations and communities that are safe, healthy, green, and sustainable, and based on equally sustainable industries. Indeed, a climate-friendly and inclusive Travel & Tourism sector has a crucial role to play in this transition, providing decent jobs, stable incomes and protecting our cultural and natural heritage. While climate change itself poses significant risks to some destinations, in many of the most high-risk areas, **Travel & Tourism has both a responsibility and an opportunity to be a catalyst for change.**

Our decisions of today define our world of tomorrow. **By increasing ambitions and actions, we have the ability to protect the world's most vulnerable tourism destinations and communities.** It is time for all Travel & Tourism stakeholders to increase ambitions and play their part in preserving our sector's most important assets - our people and planet.

We must work collectively to achieve the Paris Agreement and avoid a future where global temperatures rise above 1.5 Celsius this century. A warmer planet means more natural disasters and rising sea levels, increasing water and food insecurity, disruption to cultural and natural heritage, destruction of infrastructure and property through coastal erosion, increased stress on basic natural resources and the loss of important ecosystems such as coral reefs that are crucial for the health and competitiveness of our sector.

In this context, World Travel & Tourism Council (WTTC) in collaboration with the UN Environment Programme (UNEP) and Accenture, joined forces to provide concrete recommendations for the journey ahead. **The Roadmap**, developed in close consultation with key representatives of the global Travel & Tourism sector, highlights the current status quo and provides ambitious industry milestones for meaningful climate action and emissions reduction. It offers a realistic and pragmatic overview of the roadblocks and **how we can decarbonise to achieve a net zero future and ultimately protect our beautiful world** to help address the most pressing global challenge of our times.

Julia Simpson
President and CEO,
World Travel & Tourism Council

Dr. Jesko Neuenburg
Managing Director & Global Travel Sustainability Lead, Accenture

"Climate action needs a dramatic step-up if we are to have a shot at limiting global temperature rise to 1.5 C. The travel and tourism sector has a big stake in decarbonization because a destroyed planet serves no one's purpose. The sector has less than 10 years to accelerate the transition to low-carbon and circular business solutions; to create new opportunities in energy generation and halve transport emissions by 2030; and to integrate nature-based solutions into their operations."

Inger Andersen, Executive Director, UNEP

"Climate change represents one of the greatest global challenges of our time. Across the world, governments and companies are pledging to reach net zero emissions by 2050. While this development will strengthen our collective ambition, we are at a decisive moment that requires that such commitments are backed by concrete plans and immediate action, driving a systemic change to tackle the climate crisis. The Net Zero Roadmap for Travel and Tourism is exactly that and we look forward to collaboration with the industry to put it in action."

Patricia Espinosa, Secretary-General, UNFCCC

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EXECUTIVE SUMMARY

The urgency of climate change is more evident than ever, as emphasised by the 2021 Intergovernmental Panel on Climate Change (IPCC) report. Travel & Tourism is strongly affected by its impacts, but as many other sectors, is also an important emitter of greenhouse gas (GHG) emissions, thereby actively contributing to climate change. **It is therefore of utmost importance to decarbonise the sector as quickly as possible and reach net zero by 2050**.

In this journey, businesses play a crucial role given their investment potential and ability to affect positive change across entire value chains. For this reason, **this report is aimed at private sector stakeholders, with special focus on selected industries, namely accommodations, tour operators, aviation, cruise, and online travel agencies** (OTAs) **& travel agencies** (TAs).

With awareness growing of the urgency for decarbonisation across the entire sector, **efforts have visibly increased in the last years, with a clear focus on moving beyond carbon neutrality towards a net zero future**, where GHG emissions are either reduced to zero, avoided, or, if not possible, balanced by their removal from the atmosphere.

This report aims to offer a better understanding of the status quo of climate action of Travel & Tourism businesses within selected industries, as well as **current challenges, opportunities and needs**. It also provides a **decarbonisation corridor framework** demonstrating what net zero journeys could look like for different types of businesses and gives guidance and recommendations on potential climate action.

Highlights of the research include:

- Within Travel & Tourism, different industries vary significantly with respect to their footprint, given the different business models and corresponding emission profiles. Even within the selected industries, pronounced differences exist, highlighting **the importance of differentiated decarbonisation approaches**.
- When looking at the sector overall, the analysis showed that **despite the progress already made, there still is room for scaling up climate action.**
- **Of the 250 businesses analysed, 42% have defined a climate target. Of those, 20% are aligned with the Science-Based Target initiative (SBTi) guidance.**
- **There is great heterogeneity among the targets set**, both across and within the focus industries. They differ with respect to target metrics, target dates and baselines, or the emission reduction commitment, making comparability difficult.
- **More alignment, transparency and continuity in emission monitoring is needed for both the sector overall and individual businesses.** Available information to date is insufficient in quality and reliability, thus impeding well-informed decision-making. Regular, comparable insights on Travel & Tourism's emissions is needed to help monitor progress over time, identify needs and prioritise actions.
- **Continuous monitoring of climate commitments and actions** is also needed to improve understanding and evidence about the status quo, progress made, and the catalytic potential actions have to transform the sector.
- **Common challenges across all industries** centre around emission measurement and reporting, especially Scope 3 emissions, the fragmented regulatory landscape and lack of government support, insufficient internal and external budgets for a net zero transition as well as dependency on infrastructure.
- **It is more difficult for small and medium-sized enterprises (SMEs)** to define and follow strategic decarbonisation approaches, making it important to ensure inclusiveness in the sector's fight against climate change.

Proposed Target Corridor Framework

To cater to the identified need for further guidance and accelerate existing climate action, **a new decarbonisation target corridor framework** is presented in this study, along with an overview of key decarbonisation levers and corresponding **action items for each industry** in scope. By indicating three different corridors for net zero trajectories, the framework proposes that **certain industries will be able to achieve the net zero goal earlier than others**.

Call to Action

Target corridors clearly show that bold targets and differentiated decarbonisation approaches can lead to achieving net zero in some Travel & Tourism industries even before 2050. Businesses can heighten ambitions, with the following actions:

CONTEXT

The urgency of Climate Change

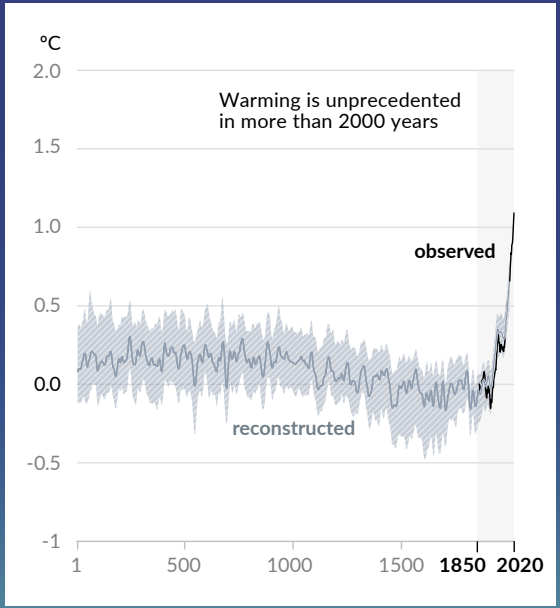
Climate change represents one of the greatest challenges humankind has ever faced, yet the global response has been slow, despite evidence of the unequivocal link between humanity's actions and the increasing temperatures of the atmosphere, ocean, and land[1].

Still, important milestones have been achieved, including the historic adoption of the **Paris Agreement in 2015 to limit global warming to 1.5°C**; the adoption of the **2030 Agenda for Sustainable Development with its 17 Sustainable Development Goals** (SDGs); the **2019 UN Climate Action Summit**, and most importantly an ever-growing global movement of younger generations demanding stronger and more targeted actions from governments and businesses worldwide. By 2020, there was clear momentum, with increasing commitments from both the public and private sector to carbon reduction and net zero ambitions; a momentum that was not slowed down by the global COVID-19 pandemic but accelerated instead[2].

To date, **59 countries, representing 54% of global GHG emissions, have communicated net zero emission targets**[3]. On the private sector side, about **21% of the world's 2,000 largest publicly listed businesses now have net zero emission commitments**[4]. In addition, the UNFCCC-backed **Race to Zero Campaign**, which mobilises a coalition of leading net zero initiatives, comprises 799 cities, 35 regions and 4,470 companies as of August 2021, covered an estimated 25% of global CO2 emissions[5]. Furthermore, the Race to Zero's SME Climate Hub includes 1000+ members who committed to halving emissions before 2030 and achieving net zero before 2050. Finally, around 1000 companies have signed up to the **Science Based Targets initiative** (SBTi) committing to specific emission reduction targets[6]; and the Climate Pledge, a cross-sector initiative co-founded by Amazon and Global Optimism in 2019, has more than 200 signatories with a commitment to reach the Paris Agreement 10 years early and be net zero by 2040.

Changes in global surface temperatures

Significant social and environmental changes resulting from global warming are felt worldwide. In effect, adverse weather conditions and natural disasters are on the rise and impacting, if not threatening, peoples' everyday lives with very few areas being exempted. The target to avoid severe impacts of climate change specified by scientists is a maximum global surface temperature increase of 1.5°C compared to pre-industrial levels. To achieve this, global emissions need to be reduced by 45% from 2010 levels by 2030 and drop to net zero by 2050. While this would still impact health, livelihoods, food security, water supply, human security, and economic growth, it would provide time and opportunity for the environment to adapt to the changing circumstances.



While such pledges characterise the accelerating growth of climate commitments worldwide, much work remains for all sectors around the world in the key areas of adaptation to, and mitigation of, climate change. It is crucial to move from ambition to action to minimise impacts.

Given the differing impacts and realities of climate change across sectors and regions, there is a special need to protect those sectors, communities, and regions that are most vulnerable to climate risks. As such, it is equally important to help facilitate a just transition where the benefits of a green economy are shared equitably. Both state and non-state actors have a responsibility to actively engage, commit and contribute to this important collective journey towards a low-carbon, healthy and climate resilient world.

Climate Change in Travel & Tourism

Climate conversations and efforts in the Travel & Tourism sector reached a turning point in the last few years, with more and more governments, businesses, civil society organisations and destinations, setting clear, tangible and increasingly ambitious commitments, while working to accelerate the shift towards a net zero future for the sector. This shift is important for several reasons:

- Accounting for over 10% of global GDP and supporting more than one in ten jobs worldwide in 2019[7], the Travel & Tourism sector has been a key global driver of economic prosperity and employment opportunities for decades. **In many countries around the world, tourism presents one of the most important sources of economic income**. What's more, given the extent and complexity of the Travel & Tourism value chain and its strong interlinkages with other industries, **the sector has both a responsibility and significant potential to be a catalyst for profound system change**[8].
- While the expected return to growth of the sector in the aftermath of COVID-19 will require an even greater acceleration of decarbonisation and other mitigation efforts, **Travel & Tourism will also have to adapt to and prepare for the unavoidable, negative effects of climate change** that have already been impacting the sector worldwide. These impacts include extreme weather events, coastal erosion, biodiversity loss, destruction of infrastructure and property, disruption to cultural and natural heritage, as well as increasing stress on basic natural resources, among others – **all of which are essential to safeguard the health of both hosts and guests**, and thus the competitiveness of tourism overall.
- Tourism demand is sensitive to negative economic, environmental, and social impacts, resulting in **tourism-dependent businesses, communities, livelihoods being increasingly vulnerable to the threat of climate change**.

In this context, **it is essential that the Travel & Tourism sector intensifies its efforts to fight climate change by exploring all available pathways towards net zero with strong, tangible commitments and actions that accelerate change within and beyond the sector's boundaries**. Both business climate commitments and cross-sectoral Travel & Tourism initiatives that bring together a wide variety of tourism stakeholders and aim to translate signature commitments into real actions will be key. Current joint efforts in Travel & Tourism include **Tourism Declares a Climate Emergency** and the **Glasgow Declaration on Climate Action for Tourism**, while at an individual business level, as of October 2021, a total of **34 Travel & Tourism businesses joined the SBTi** (of which 38% are WTTC members) and **39 businesses are officially in the Race to Zero** (of which 18% are WTTC members).

Looking back & ahead: Tourism growth

Affordable air travel, growing middle classes, urbanisation, increased connectivity, technological advances, disruptive business models and greater visa facilitation around the world drove international and domestic tourism growth over the past decades. Before COVID-19, in 2019, the Travel & Tourism sector reached its 10th consecutive year of growth with 1.47 billion international tourist arrivals worldwide and a forecast of continued growth until 2030.

Yet, COVID-19 had a dramatic impact on the Travel & Tourism sector in 2020, making it one of the hardest-hit sectors worldwide. International spending dropped by 69% compared to the previous year and the sector's contribution to GDP declined by nearly 50%, compared to an overall decline of global GDP of 3.7%. Over 62 million jobs were lost in the sector globally due to the pandemic, particularly impacting Small and Medium Sized Enterprises (SMEs), which account for 80% of all business in the Travel & Tourism sector.

As the sector emerges from this crisis, COVID-19 already demonstrated one major lessons for Travel & Tourism: the future of the sector will depend on its ability to rebuild a more sustainable and resilient tourism model that balances the needs of people, planet, and prosperity, with net zero commitments and climate action playing a key role in this responsible recovery.

The role of the Private Sector

As the largest source of potential investment into a green transition and with the ability to affect positive change across entire value chains, the private sector not only has a crucial role to play but a responsibility to proactively participate in driving the decarbonisation of the entire Travel & Tourism sector through active engagement in policy discussions, cross-disciplinary and global collaboration on technology development, rapid generation of knowledge, targeted education, and the promotion of green growth, among other activities. This is especially important for larger businesses, which, in a sector comprised predominantly of SMEs, play an even greater role as enablers and supporters of the Travel & Tourism ecosystem. Beyond responsibility, the benefits from increased climate action are outlined in the following sections.

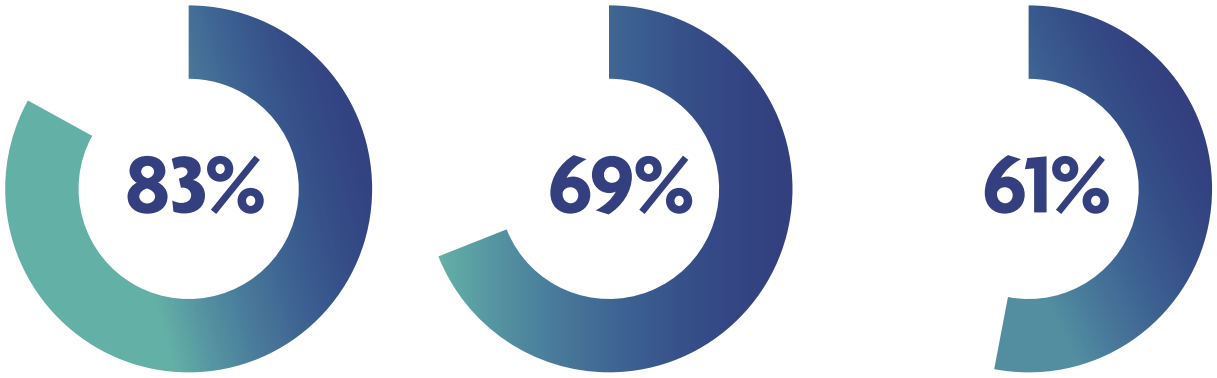
Business Performance

The adoption of sustainable practices can strengthen business performance through reduced energy consumption and costs, fuel efficiency improvements, waste reduction, increased risk preparedness, as well as increased brand awareness and revenue growth opportunities. These in turn can increase the competitive advantage of a business and make it more attractive for consumers, employees, and investors.

Increasing Demand

Travellers' awareness of the climate crisis has increased continuously over recent years (Exhibit 1), in turn reshaping expectations. 61% of travellers say they want to travel more sustainably in the future[9], which is reflected in their travel and holiday booking decisions. While over 80% of travellers plan to prioritise sustainability in their travels in the coming year[10], 70% indicated that travel companies should offer more sustainable choices[11]. However, not only travellers' awareness is increasing, but also travellers' actual behaviour. For example, in 2019, 10 million travellers have chosen a lower-emission flight with Skyscanner[12]. Travel & Tourism companies can benefit from leveraging their sustainability initiatives, but in doing so, they have a responsibility to provide accurate and non-misleading information, including for advertising and marketing purpose, on the climate impacts of tourism, greenhouse gas emissions and carbon offset activities, which are essential to enable consumers to make informed decisions and address new consumer demands[13].

Exhibit 1: **Relevance of sustainability among global travellers[14]**



Of global travellers think sustainable travel is vital

Of global travellers expect the travel industry to offer more sustainable travel options

Of global travellers say pandemic has made them want to travel more sustainably in the future

Regulatory Frameworks

Whilst traveller behaviour is changing, legislation and policy makers are also putting increased pressure on Travel & Tourism companies to increase sustainability performance. Indeed, in the past years, there has been growing regulatory pressure to monitor and report progress on GHG emissions reduction from industry initiatives, insurers and financial institutions, NGOs, governmental bodies as well as country specific administrations). Targets set within the cruise[15] and aviation industries provide some of the most prominent pressure on the sector[16]. As a result of increasing regulatory pressures, companies are developing new capabilities to track the relevant regulations and implement effective feedback loops to measure their progress.

ABOUT THIS REPORT

The Net Zero Roadmap is intended to support Travel & Tourism stakeholders, including the private sector and sustainability experts, on their journeys towards net zero emissions, with a focus on creating more knowledge about the status quo of emission profiles and climate commitments of the private sector. This includes the most common roadblocks and areas for support, as well as decarbonisation levers that can contribute to the formulation and achievement of net zero targets. The report focuses on specific industries of the Travel & Tourism sector, notably, accommodation, tour operators, aviation, cruise, and OTAs and travel agencies, and offers a decarbonisation framework with specific action tables to support companies in their prioritisation processes. It aims to identify and provide tools and resources to the sector that will encourage collaboration, and support businesses to further prioritise climate action and set high ambitions that will accelerate the change towards a net zero future.

The five industries selected not only represent a significant proportion of the Travel & Tourism sector, but also cover a wide range of different business models, carbon emission profiles, and decarbonisation pathways. Specifically:

- **Accommodation** providers range from multinational hotel groups to small businesses with only a single building. Typical segments in accommodation are hotels, hostels, resorts, vacation rentals, and others.
- **Tour Operators** compose and sell package tours by combining separate travel components from various suppliers, sometimes adding components they provide themselves. This results in a travel product that can span travel, accommodation, transportation, and activities.
- **Aviation** in the context of this report refers to airlines only. Typical segments are low-cost carriers (LCC) and full-service carriers (FSC).
- **Cruise** ships are passenger ships for vacationing. The cruise can act as accommodation, destination and as a tour operator at the same time, making it a complex industry. Typical segments are ocean and river cruises.
- **Tourism intermediaries** includes a variety of businesses such as Online Travel Agencies, Travel Agencies and Metasearch Engines, and other commercial intermediaries. This group of businesses was selected based on their common role as distribution/reseller and information agents that facilitate both searching and booking of travel products either online or offline. For the report, this group will be referred to as OTAs/TAs.

This report recognises that adaptation and mitigation can be complementary; climate adaptation reduces the risks and costs of climate change impacts and thus reduces the needs for mitigation. However, adaptation is not covered within this report, which primarily takes a mitigation perspective.

In terms of methodology, this report includes a combination of primary and secondary research methods. Extensive analysis was conducted of documents from academia, international organisations, and Travel & Tourism companies, including existing climate roadmaps, sustainability reports, traveller surveys, methodology papers, and guides. This research was complemented by expert interviews, as well as industry-specific focus groups, to validate insights and analysis created from the desk research and to gain a deeper understanding of their key challenges and needs.

Terminology and key concepts used in the report

To generate a common understanding, around some of the terms relating to carbon emissions and efforts to reduce emissions, some of the key terms used in this report are described below:

Carbon emissions and GHG emissions are used interchangeably in this report. Emission calculations are shown in form of CO2 equivalents (CO2e) and include scope 1, 2, 3 emissions, unless otherwise indicated.

Decarbonisation in the context of this report refers to all GHG emissions, including CO2.

Carbon neutrality is the balance between emitting, and the voluntary compensation (offsetting) of emissions, to achieve a neutral emission equilibrium. Carbon neutrality refers to emissions in Scope 1 and 2, but not necessarily Scope 3 emissions.

Net zero (emissions) beyond carbon neutrality as it applies to Scope 1, 2 and 3 emissions. The first step towards net zero emissions is to achieve the maximum feasible reductions of emissions. These reductions must be aligned to a 1.5°C science-based target. The second step entails removing any remaining greenhouse gases through greenhouse gas removals. These removals must be at a negative contribution. While offsetting may have a subsidiary role, it must be complementary to real reductions.

GHG Protocol Emissions Categorisation

Scope 1: direct emissions from a business's operations such as fuel combustion, operation of vehicles and fugitive emissions.

Scope 2: indirect emissions resulting from the generation of purchased electricity, heating or cooling and steam by a business.

Scope 3: indirect emissions that occur in a business's value chain such as purchased goods and services, business travel, employee commuting, waste disposal, transportation up- and downstream, investments, leased assets, and franchise activities.

For a more extensive list of concepts and terminologies, please see the Annex.

ON THE WAY TOWARDS NET ZERO

A Status Quo Analysis

This section provides an overview of the status quo of decarbonisation in Travel & Tourism with specific focus on the selected industries, including an overview of the sector's estimated pre-pandemic emissions footprint, selected progress examples, insights on climate commitments, and their key challenges and needs.

Travel & Tourism's Carbon Emissions Footprint

Travel & Tourism is a global and diverse sector with links to many different sectors, from transport to retail, to agriculture and services industries. While its size and economic impact speaks to a significant source of carbon emissions, **reliable estimations on precise volumes and shares for Travel & Tourism globally and its industries continue to present a real challenge**. As a result, and due to missing alignment on data sources and methodological approaches, available estimates tend to be nearly incomparable.

A study published by United Nations World Tourism Organisation (UNWTO), UNEP and the World Meteorological Organization (WMO) in 2008 indicated that Travel & Tourism associated greenhouse gas emissions were estimated to be around 5% (1304 Mt) of global emissions in 2005[17]. This figure included the emissions of three industries, namely transportation, accommodation, and other Travel & Tourism activities, with transport generating 75% and accommodations generating 21% of the overall emissions of the sector. In addition, transport related GHG emissions from tourism represented about 18% of the total transport emissions and 3.7% of all man-made GHG emissions.

Research undertaken in 2018 by Lenzen et al.[18] indicated that tourism's global carbon footprint increased from 3.9 to 4.5 GtCO2e between 2009 and 2013, four times more than previously estimated, accounting for about 8% of global greenhouse gas emissions. In this study, emission shares were 49% for transportation; 12% for retail, 10% for food & beverage services and 6% for accommodations. In 2019, a UNWTO and International Transport Forum (ITF) study noted that transport-related emissions from international and domestic tourism represented 5% of all man-made emissions and 22% of the total transport emissions in 2016[19]. While the study did not include estimates on the total emissions from Travel & Tourism with emission shares of the different industries, it indicated an estimated increase of 25% in

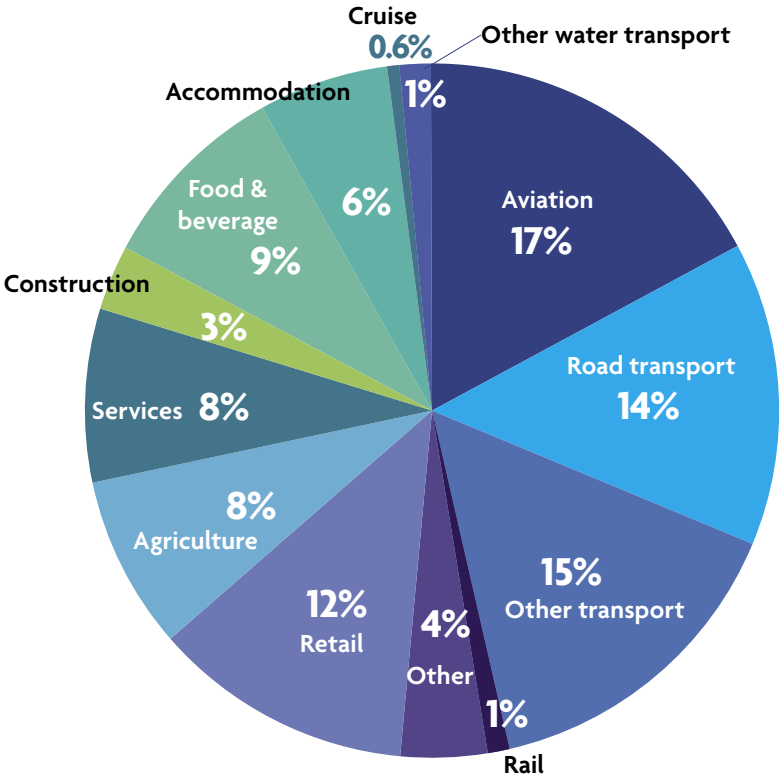
transport-related GHG emissions until 2030 (if the current ambition of the sector remains the same), forecasting that tourism-related transport emissions would account for 5.3% of all man-made emissions by 2030. A more recent initiative by Skift[20] aimed to quantify domestic and international tourism emissions for 25 countries, indicating that around 11% of global GHG emissions were being generated by Travel & Tourism before COVID-19.

Currently available estimates of Travel & Tourism emissions thus range from 8%-11% of global GHG emissions (3.9 to 5.4 billion tonnes of CO2 emissions out of a total of 48.9b tCO2e in 2019). Given this range is not negligible, there is an urgent need to accelerate action towards net zero goals. Still, more research and aligned standards for measuring GHG emissions within Travel & Tourism are needed to guarantee comparable, reliable evidence about the sector's impact and mitigation action and establish clear baselines and targets to monitor over time.

Travel & Tourism Industries In Focus

While there is more data and reporting insights available on carbon emissions for aviation, accommodation, and cruise, there is a lack of valid estimates for tour operators, OTAs, TAs and the other types of intermediaries at an aggregated level. Hence, for the purpose of this report, the industry breakdowns estimated by Lenzen (2018) were used as the basis for the assessment of pre-pandemic carbon emissions for Travel & Tourism industries as well as some of the most significant contributing industries in the Travel & Tourism value chain (see Exhibit 3 and 4).

Exhibit 3: **Split of tourism-related GHG emissions by industry (pre-pandemic)** [21]



Note: The above emission share has been updated for aviation by using the latest IATA's Aviation and Climate Change Fact Sheet pre-pandemic estimates. Cruise was separated from water transport by conducting a bottom-up estimation based on sustainability reports. The chart includes shares of most contributing scope 3 emission sources (e.g. agriculture).

Exhibit 4: **2019 carbon emissions estimates per industry** [22]

Industry	Carbon Emissions (million tCO2e)
Accommodation	324
Tour Operators	N/A
Aviation	915
Cruises	27
OTAs	<1
Travel Agencies	N/A

Note: Estimates exclude Scope 3 emissions. Aviation emissions reported in tCO2.

The 6% contribution of accommodation to the total Travel & Tourism emissions of 5.4b tCO2e translates to 324 million tonnes of CO2e. Other industries in the accommodation value chain such as food & beverages are explicitly separated suggesting that the previous 2008 accommodation estimate of around 21%[23] included Scope 3 emissions. The cruise industry accounts for approximately 0.6% of total Travel & Tourism emissions, representing an estimated 27 million tCO2 on the basis of the consolidation of carbon emissions reported by the top four cruise businesses (approx. 60% of passengers) and an extrapolation of the remaining 40%. The estimate includes Scope 1 & 2 emissions, given that most cruise businesses do not disclose their Scope 3 emissions. Aviation carbon emissions, which represent around 17% of total Travel & Tourism emissions, are documented and reported regularly by industry bodies, such as the International Air Transport Association (IATA), whose pre-pandemic estimates amounted to 915 million tCO2, excluding mainly Scope 3[24].

For Tour Operators, OTAs and the other intermediaries included in the analysis, valid estimates and reporting information are currently unavailable due to the fragmentation of these industries. An initial intent to estimate carbon emissions specifically for OTAs was undertaken in the context of this report by consolidating the carbon emissions reported by the top three OTAs with the highest market share (approximately 86%) and an extrapolation of the remainder 14%. The result is a carbon footprint lower than 1 million tCO2 emissions, however given that two of three OTAs did not disclose their scope 3 in 2019, the latter estimate includes mainly scope 1 and 2 emissions.

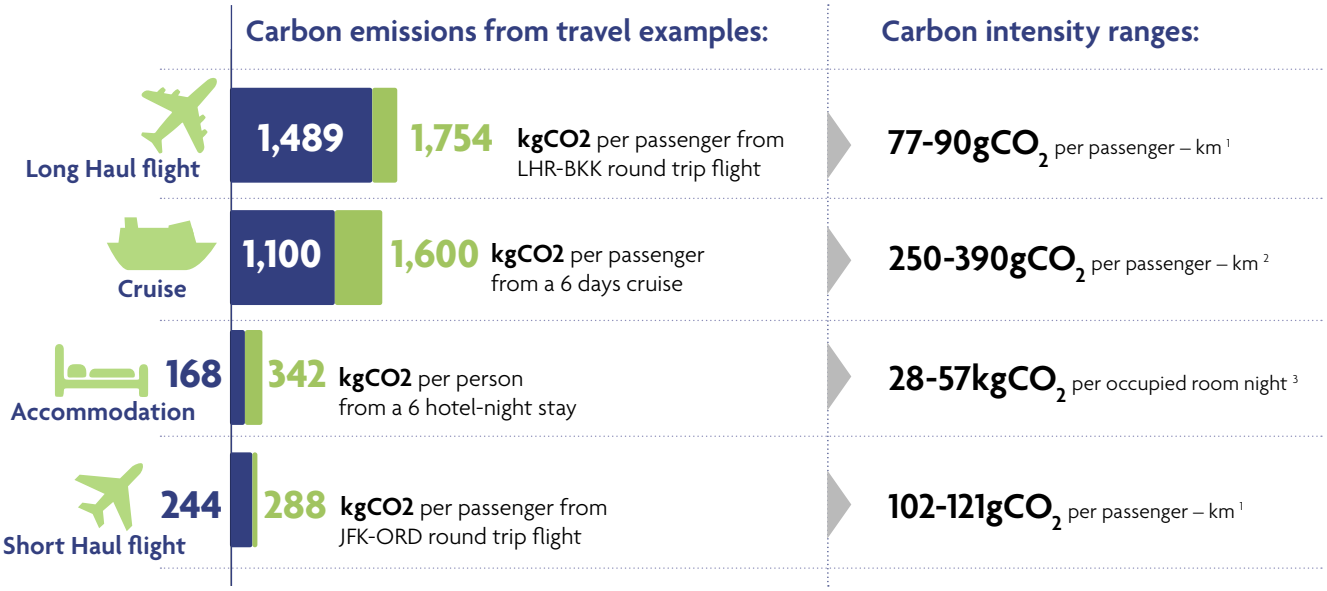
Carbon Intensities

Climate change mitigation is measured in terms of the total amount of CO2 that can be emitted before global temperatures increase beyond the +2 degrees Celsius agreed on in the Paris Agreement. Although global goals, such as the sector's 2050 net zero goal, refer to the reduction in absolute emissions (emission reduction targets), most of the focus industries track their carbon emission reductions in terms of carbon intensity gains (carbon efficiency targets).

In this context, carbon intensity can be defined as the volume of emissions relative to a specific unit of economic activity/metric that reflects the primary operation of a given industry. This allows businesses to set emissions reduction targets while accounting for growth. In some cases, however, the growth of a particular industry might translate into a decrease of its carbon intensity and at the same time an increase in absolute emissions. While the aviation industry usually expresses carbon intensity in grammes of CO2 per revenue passenger kilometre (RPK) or per available seat kilometre (ASK), most cruise companies report their carbon intensity in grammes of CO2 per available lower berth (ALB) kilometre. In accommodation, an initiative is currently under way to develop a Net Zero Hotel Methodology[25] with the goal to streamline and align carbon intensity reporting in kilogrammes of CO2 per square meter and includes a suggested metric in CO2 emissions per occupied room per night. Regarding the other industries, some tour operators (asset light), OTAs and TAs report their carbon intensity as tonnes of CO2 per full-time equivalent (FTE) or per revenue generated. However, the latter is not standardised or commonly used yet.

Carbon intensity ranges vary significantly depending on the industry (see exhibit 5). For instance, carbon intensities per passenger basis might seem lower for long and short-haul flights vis-à-vis carbon intensity ranges for cruise passenger kilometres. However, when applying these intensities to specific travel examples the picture looks different. Although shorter flights tend to have lower carbon intensity ranges per passenger km than flights with longer distances due to increased fuel burned in take-off and landing, a long-haul flight in an economy cabin produces similar total emissions to a 6-day cruise, and much higher total emissions than a short-haul flight in an economy cabin. This highlights the importance of differentiated views and the need to closely monitor and consider both intensities and absolute emissions for mitigation pathways.

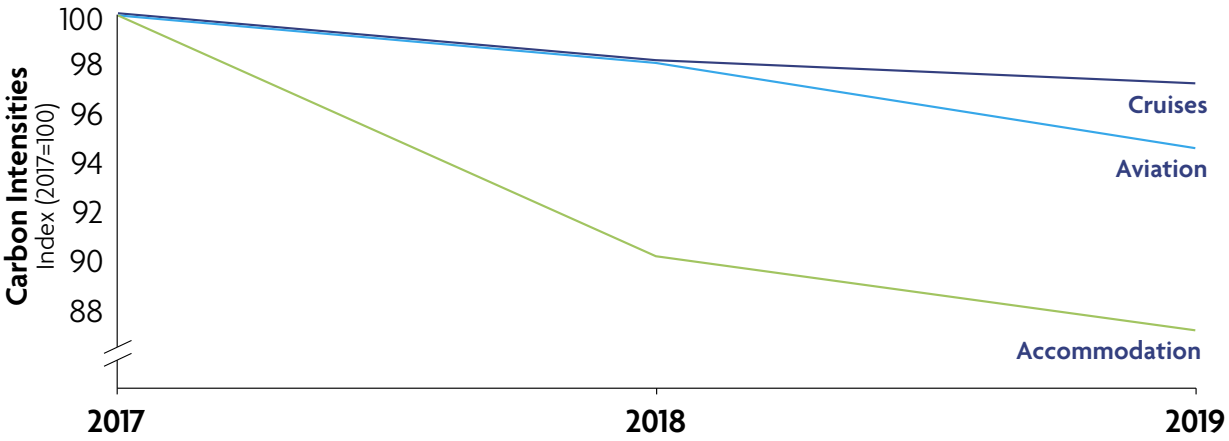
Exhibit 5: **Carbon emissions from selected travel examples and overview of carbon intensity ranges**[26]



Note: (1) Carbon intensity for economy cabin seats, (2) Average emissions intensity of the world's largest cruise operator (low range) and emission intensity of the cruise ship class with the second highest intensity measure (3) Averages of Measure 1 lower and upper quartile from Cornell Hotel Sustainability Benchmarking Index (CHSB) 2021 (4) While cruise is often considered as a transport-only industry, it provides accommodation and transportation services.

Overall, within Travel & Tourism, carbon intensity reduction efficiency is taking place at different paces. To date, the accommodation industry reduced its carbon intensity faster than aviation and cruise, both industries for which the transition to net zero is not so straightforward as compared to others due to the relatively high dependency on fossil fuels and high costs of transition (see Exhibit 6). While a continuous review of carbon intensity is needed, absolute emissions tracking also requires attention to ensure both metrics decrease over time and the 2050 absolute reduction goal is reached for the sector.

Exhibit 6: **Average carbon intensity trend in selected Travel & Tourism industries from 2017-2019**[27]



Note: Accommodation: weighted average carbon intensity measures available and reported by the top 5 accommodation businesses with the highest number of rooms, in kgCO2e per square meters. Cruise: weighted average carbon intensity measures reported by 3 cruise businesses with the highest market share, in gCO2e per ALB-km. Aviation: ATAG Waypoint 2050 Fact Sheet #3 (February 2021), carbon intensity measures in gCO2 per passenger km (pkm) supplied by IATA economics. More businesses were reviewed for this exercise but only those with carbon intensities in kgCO2e (accommodations), gCO2e per ALB-km (cruise), and gCO2 pkm (aviation) were used for the graph.

Industry Emission Profiles

To better understand the emission profiles of different Travel & Tourism businesses, an analysis was undertaken of the 'typical' allocation of emissions along all three emission scopes. Exhibit 7 provides an overview of the results and includes specific examples of emissions in each scope. To estimate the allocations, reported Scope 1, 2, 3 emissions were collected from the top 5 businesses for each industry, averaged, and rounded (also see Exhibit 33 in the Annex **here>**).

Exhibit 7: **Overview of reported emission profiles of the Travel & Tourism industries in focus**[28]

Industry	Scope 1 (average share in %)	Scope 2 (average share in %)	Scope 3 (average share in %)
Accommodation	**8%** On-site gas and fuel consumption, on-site vehicles	**37%** Building energy consumption (in-house laundry, lighting, energy use), office heating, cooling, and electricity	**55%** External laundry services, waste disposal, F&B supply and production, staff travel
Tour Operators (asset light – do not own hotels, airplanes, or cruise ships)	**2%** Office gas consumption and owned vehicle emissions	**6%** Office heating and energy consumption	**92%** Business travel, commute, transport & distribution, electricity, brochures, waste
Tour Operators (asset heavy – own hotels, airplanes, and cruise ships)	**95%** Fuel, on-board power generation, vehicle emissions, major & retail premises gas and fuel consumption	**1%** Major premises energy consumption, office heating, cooling, and ground & port electricity	**4%** Business travel, commuting, F&B supply and production, waste disposal, up- and downstream transportation & distribution
Aviation	**80%** Aircraft fuel, vehicles in airport operations	**<1%** Office heating and energy consumption, ground electricity	**20%** Supply chain fuel, capital goods, purchased goods, downstream transport, and distribution
Cruises	**99%** Ship fuel, on-board power generation for support functions	**1%** Office heating, cooling and electricity, port electricity	**<1%** or not disclosed Commuting, passenger transportation F&B supply & production, fuel transport, waste
OTAs / TAs	**9%** Office gas consumption and owned vehicle emissions	**55%** Office / data centre heating, cooling, and electricity	**36%** Business travel, staff commuting, waste management, purchased goods and services

Note: The emission profiles are estimates based on a sample of business emission analysed for this report. Selection metrics varied by industry; for details, please see Exhibit 33). Although the profiles have been discussed and verified with companies directly, considering the wide variety of business models even within each focus industry and differing approaches to calculating Scope 1, 2, 3 emissions, they should only be seen as indicative profiles.

The above exhibit showcases significant heterogeneity in the emission profiles of the respective Travel & Tourism industries. In effect, in accommodation, most of the emissions originate from the value chain and purchased services (Scope 3, 55%), while Scope 2, representing energy consumption, is the second most notable emissions source (37%). For tour operators, depending on the underlying business model, the emission profiles differ significantly. The asset light tour operators' emissions come almost entirely from Scope 3 (representing 92% of the emissions), while the asset heavy ones are characterised by an inverted emission profile, with 95% of the emissions having their source in Scope 1. Unsurprisingly, the majority of OTAs' and TAs' emissions have their source in Scope 2 (55%) and Scope 3 (36%), primarily linked to data centres electricity consumption and related services. As the definition of Scope 3 evolves, it is expected that the allocation of OTAs' and TAs' emissions may also change.

In contrast, in aviation, 80% of the emissions derive directly from the operations and are predominantly related to aircraft fuel. The aviation industry appears to be the most mature industry in terms of Scope 3 calculation, taking the key elements from the supply chain into account. Similarly, 99% of the cruise emissions arise from Scope 1 (with ship fuel being its main component). Changes in percentage allocation of the emissions for cruises can be anticipated once a new methodology of Scope 3 calculation emerges.

Overall, results reveal that the distribution of Scope 1, 2, and 3 emissions tends to vary significantly between the focus industries, indicating that businesses face different levels of complexities when it comes to reducing emissions.

Progress made so far

While some industries within Travel & Tourism are able to make significant and quick reductions to their carbon emissions, other are harder to decarbonise. Still, noteworthy progress has been made, highlighted in the below examples.

- **Accor Group** reported continuous GHG reductions since launching its first sustainability programme in 2006. The Group's latest strategy – "Our Planet 21 – Acting Here" is focused on two key areas: food and buildings. As food accounts for 50% of the generated waste and is the largest contributor to the Group's biodiversity & water footprint, as well as the second largest contributor to its carbon footprint, Accor undertakes multiple initiatives to reduce food waste and promote healthy and sustainable food. The Group also committed that all the construction and renovation schemes concerning its hotel portfolio are low-carbon building projects[29].
- **Bucuti & Tara Beach Resort** in Aruba claims to be the first carbon neutral resort in the Caribbean. The resort implemented measures such as reducing emissions to the lowest per-occupied-room electricity usage in Aruba, regional sourcing of supplies and solar panels to generate energy for heating water. Going beyond carbon neutrality, Bucuti & Tara strengthened its sustainability pledge by committing to the goal of becoming carbon negative[30].
- **United Airlines** was the first airline to commit to reduce its GHG emissions by 100% by 2050 without relying on offsets. It reduced its emissions intensity by 46% between 1990 to 2019. A combination of constant fleet renewal, operational improvements, and investments in sustainable aviation fuel (SAF), and direct air capture technology (DAC) for carbon removal contributed to this achievement. Additionally, United committed to science-based targets and is part of the Business Ambition for 1.5C initiative[31].
- **Intrepid,** the largest small group adventure travel business in the world, became a carbon neutral business in 2010. In 2018, Intrepid revised its reporting methodology to be in line with Climate Active under the Australian Government's Carbon Neutral Initiative and declared climate emergency with Tourism Declares in 2019. Intrepid is also the first tour operator with approved science-based targets and developed a guide for decarbonisation for other, similar businesses to foster transparency and collaboration[32].
- **Carnival Corporation** is a member of the Getting to Zero Coalition (along with MSC Cruises, Hapag-Lloyd, and others) that aims to accelerate maritime shipping's decarbonisation. Besides aligning with the International Maritime Organisation (IMO) target of reaching 50% absolute carbon reduction by 2050, Carnival set the goal of being carbon neutral by 2050. Moreover, commitments include a 40% reduction in carbon rate per available lower berth day (ALBD) by 2030 (with 2008 baseline). Activities to reduce emissions include optimising itinerary planning, improving better equipment, utilising more Liquefied Natural Gas (LNG), and striving for cleaner shore power[33].
- **The Travel Corporation (TTC)** has a long history of supporting projects that align with the planet, its people, and its wildlife through its foundation. In 2020, the business launched its 5-year sustainability strategy that includes 11 sustainability goals aligned with the UN SDGs, including the target to be carbon neutral by 2030 or sooner and to sourcing 50% of its electricity from renewable sources by 2025. The specific steps to reach its goals are specified in its 5-point climate action plan. TTC has also recently developed and launched an internal carbon calculator that will help with Scope 3 estimates[34].
- **Tulips**, a consortium led by the Schiphol Airport secured a $29.5m funding from the European Commission to support a transition to low-carbon mobility and enhance sustainability at the airports. Additionally, aircraft recharging facilities using electricity or hydrogen will be tested and large-scale supply of SAF will be introduced. The consortium aims to accelerate the implementation of sustainable technologies that significantly contribute to achieving zero emissions & zero waste airports by 2030, as well as climate-neutral aviation by 2050.
- **Booking.com** started to offset 100% of their carbon emissions related to operational activities since 2020. It released its annual Sustainable Travel Report and cooperates with partners to offer a broad array of sustainable choices to the consumers[35]. The business is expected to set clear targets and a plan on how to achieve those goals within the

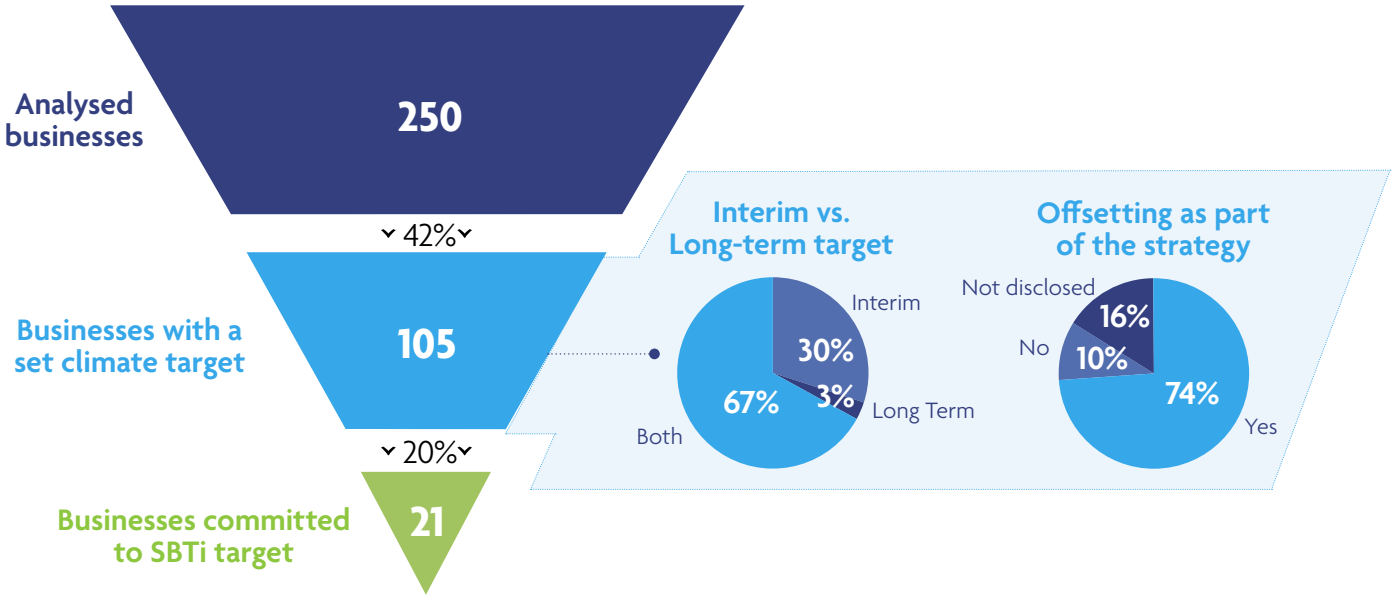
next year. As founding member of Travalyst, Booking is working with other partners to develop unified sustainability reporting which will help consumers make better travel choices. The aim is to ensure information is consistent, credible and easy-to-understand and it will reflect decarbonisation efforts of suppliers[36].

These examples not only illustrate how the Travel & Tourism sector has frontrunners with determined climate action pathways but show that measuring emissions and understanding their sources is a crucial first step to take action.

Climate Targets

The Travel & Tourism sector is committing to emission reduction targets, with many players in the sector including their climate and environment goals in their periodic reports, such as financial reports or sustainability reports. To generate a comprehensive overview of the status of climate targets in across the sector, a sample of 250 Travel & Tourism businesses were analysed (50 within each focus industry), see Exhibit 8. These businesses were selected according to their size and market share.

Exhibit 8: **Summary of climate targets in the analysed sample of Travel & Tourism businesses**[37]



Based on publicly available sustainability reports, 42% of the leading Travel & Tourism businesses have set a climate target (interim, long-term or both), of which 74% use carbon offsetting. Of the businesses with a set climate target, 20% have set emissions reduction targets grounded in climate science through the Science Based Targets initiative (SBTi). The relatively low overall percentage can be explained by the lower percentage of tour operators (14%), OTAs and travel agencies (22%) which have defined a climate target. As these industries are just starting their decarbonisation journey no information was publicly available regarding their commitments.

Exhibit 9: **Overview of climate targets among Travel & Tourism industries**

Comparison Criteria	Industry				
	Accommodation	Tour Operators	Aviation	Cruise	OTAs / TAs
1. Businesses analysed	50	50	50	50	50
2. Selection Logic	Number of rooms (2019)	Revenue (bn $ 2019) + WTTC members & World Travel Awards	Number of seats (2019)	Number of passengers (2019) + CLIA members	Revenue (bn $ 2019) + WTTC members & Travel Weekly Power List
3. Members of WTTC	11 (22%)	15 (30%)	4 (8%)	6 (12%)	12 (24%)
4. Businesses with a Climate Target	17 (34%)	11 (22%)	28 (56%)	42 (84%)	7 (14%)
4.1 Interim Target Only (2025 - 2035)	12 (71%)	7 (64%)	3 (11%)	4 (10%)	6 (86%)
4.2 Long-Term Climate Target Only (2040 - 2050)	0 (0%)	0 (0%)	3 (11%)	0 (0%)	0 (0%)
4.3 Interim & Long-Term Targets	5 (29%)	4 (36%)	22 (78%)	38 (90%)	1 (14%)
4.4 SBTi aligned target	10 (59%)	2 (18%)	7 (25%)	0 (0%)	2 (29%)
4.5 Part of Race to Zero	4 (24%)	3 (27%)	5 (18%)	0 (0%)	0 (0%)
4.6 Offsetting as part of the climate strategy	14 (82%)	11 (100%)	27 (96%)	19 (45%)	7 (100%)

Accommodation

The analysis included leading accommodation businesses ranked by the number of rooms in 2019. Out of this sample, 17 hotel chains (34%) set a carbon reduction target, 76% established interim targets, and 24% included both interim and long-term targets in their sustainability plans. Furthermore, almost 60% of these commitments are aligned with science-based targets. Four of the analysed accommodation providers are part of the Race to Zero campaign. In terms of the choice of target metric, 41% of the hotel chains apply the targets to their carbon intensity metric (CO2 per m2), whereas 59% aim to reduce absolute emissions. Carbon offsetting is accepted by most of the examined accommodation providers (82%). What's more, half of the evaluated accommodation providers report Scope 3 emissions partially. As Scope 3 includes the emissions from the franchised hotels, it is an important segment requiring additional attention while setting the emission reduction target.[38]

Tour Operators

The research was conducted for leading tour operators ranked by 2019 revenue and supplemented by WTTC's Members as well as World Travel Awards list of leading global tour operators. Carbon reduction targets are currently set by 11 businesses (22%), of which 64% include an interim target, and the remaining 36% both the interim and long-term targets. All the three emission scopes are covered by 91% of the tour operators with a decarbonisation target in place, out of which two tour operators set separate targets for Scope 1, 2 and Scope 3. These climate targets are largely aimed at

reducing absolute emissions; and in 36% of the cases the targets were applied to a carbon intensity metric. There is however a lack of homogeneity in the definition and reporting of carbon intensity metrics for this industry. Depending on the business model, some of the asset light tour operators use CO2 per passenger or CO2 per FTE as their default metric whereas the asset heavy businesses articulate their carbon intensity in CO2 per passenger night (cruise) or per revenue tonne km (aviation). On the other hand, all tour operators assessed include carbon offsetting as part of their sustainability strategy.

Aviation

The evaluation included the largest airlines ranked by the number of seats in 2019. Carbon reduction targets are set by 28 airlines, accounting for more than half of total airlines assessed. Of those, close to 80% of airlines defined both an interim and long-term target. Additionally, all airlines analysed include Scope 1, 2 and 3 in their decarbonisation targets. However, these aim mostly to reduce absolute carbon emissions, especially for the airlines with carbon neutrality targets or aligned to Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). 30% of airlines apply their reduction targets to a carbon intensity metric, normally expressed in CO2 per revenue passenger kilometres. Both carbon neutrality and net zero targets set by these aviation businesses allow for the use of carbon offsets. To date, one airline explicitly committed to reducing 100% of its carbon emissions by 2050 without relying on the traditional offsets, seven airlines committed to science-based targets through SBTi and five joined the Race to Zero campaign. Further commitments are expected from airlines with the new SBTi guidance released in August 2021.

Cruise

The analysis was conducted for the biggest cruise lines, ranked by the number of passengers in 2019 and supplemented by Cruise Lines International Association's (CLIA) members. 84% of the cruise lines assessed defined a decarbonisation target, out of which 10% include an interim target, and 90% undertake both interim and long-term commitments. Even if close to 95% of the targets appeared to cover all three emission scopes and applied to their carbon intensity metric, most of the analysed companies did not disclose their total Scope 3 emissions publicly or reported only emissions related to employee commuting. The remaining 4% have carbon neutrality commitments, expressed as 100% reduction of their absolute emissions. 90% of the analysed cruise lines are members of CLIA and therefore follow the carbon reduction targets of 40% carbon intensity reduction by 2030 and 70% reduction by 2050 (relatively to 2008 baseline). Seven of the cruise lines set a more ambitious target of 100% carbon neutral ship operations by 2022, 2030 and 2050. As the current SBTi guidance for cruise industry is still underway, no cruise line could yet align to this guidance.

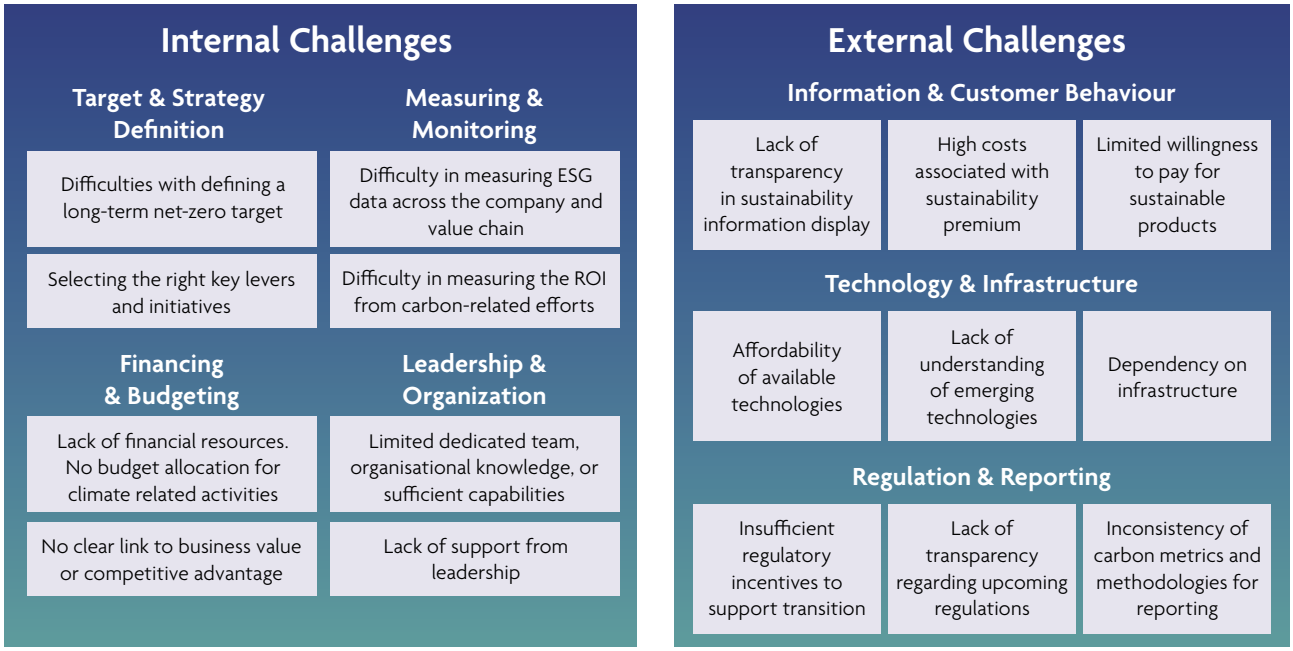
OTAs & TAs

The analysis included 21 online travel agencies and 29 travel agencies ranked by revenue and was supplemented by WTTC's Members as well as Travel Weekly's 2019 Power List. Out of the total businesses analysed, 14% reported or had a sustainability target and the ones that included a carbon emissions reduction target mainly reflected interim commitments. One TA established both an interim and long-term target. Similarly, to the cruise industry, Scopes 1, 2 and 3 are covered in 86% of the decarbonisation targets, however, the definition and measurement of Scope 3 emissions is a significant hurdle for this industry. Additionally, for 14% of the OTAs & TAs, the climate target aimed to reduce their carbon intensity expressed as CO2 per FTE, whereas the rest of the analysed group aim to reduce their absolute emissions. Regarding alignment with SBTi, two of the TAs, representing 27% of the entire group with an established target, have a science-based target. Conversely, carbon neutrality has already been achieved by close to 60% of the businesses with a public carbon reduction commitment.

Key Decarbonisation Challenges

The research, expert interviews and focus groups highlighted a number of decarbonisation challenges and needs for Travel & Tourism businesses. While some of these challenges were common across industries, others were more specific for different groups. A summary of all challenges identified can be found in Exhibit 10.

Exhibit 10: **Overview of the key challenges of Travel & Tourism businesses**[39]



Of the challenges identified; the following appeared to be the most common across industries:

- **Emission measurement and reporting:** The measurement and allocation of emissions is a challenge for the sector. This includes the definition of which emissions are to be considered, how to allocate them and the technical capabilities to measure and report emissions accurately and/or regularly. Both aspects are particularly challenging for Scope 3 emissions.
- **Regulatory frameworks and government support:** The fragmented nature of the sector and the rapidly evolving regulatory landscape leads to planning uncertainty. In addition, a continuous lack of government support and insufficient regulatory incentives present challenges in the transition to net zero.
- **Financing:** Given the insufficiencies regarding regulatory incentives and frameworks, businesses in the sector face the challenge of prioritising their internal budget and financing to support needed net zero investments.
- **Infrastructure dependency:** Dependence on local infrastructure can significantly affect Travel & Tourism businesses as their ability to decarbonise is often limited by local energy and waste infrastructures, transportation options, sustainability performance of available buildings, port facilities and so on.

More broadly, it is generally harder for SMEs to define and follow a more strategic decarbonisation approach, making it important to ensure inclusiveness in Travel & Tourism's fight against climate change.

Beyond cross-industry challenges, Travel & Tourism businesses face industry-specific challenges, outlined below:

Accommodation:

1. **Emission boundaries:** Many accommodation providers face difficulties in determining the boundaries of emissions to be considered. There is a need for a standard methodology to assess which emissions to include and how to prioritise them. This is particularly challenging for Scope 3 emissions (e.g. external laundry services, waste disposal, F&B supply, and production). A promising approach to address this challenge is outlined in the Net-Zero Hotel Methodology (2021).
2. **Different business models**: The existence of various ownership models complicates the assignment of emissions to the different roles (e.g. holiday rentals, hotel owner, hotel operator, franchisee). As a result, it is often not clear who should invest in corresponding decarbonisation initiatives.
3. **Infrastructure dependency**: Accommodation providers' dependence on local third parties and infrastructures are a challenge. What's more, the potential to reduce Scope 2 emissions by switching to on-site renewable energy sources (e.g. solar, wind, geothermal energy) highly depends on local energy infrastructures.

Tour Operators:

1. **Target setting**: Due to the lower regulatory pressure compared to other industries, many tour operators are just getting started on their net zero journey. Hence, challenges are often centred around getting transparency on the own footprint, calculating a baseline, and defining a climate target and action plan.
2. **Dependency on infrastructure**: Tour operators are strongly reliant on the destinations' infrastructures, including the destination's agriculture, energy procurement, waste disposal, and transport among others. This adds complexity in measurement and can limit the businesses in their ability to reducing them.
3. **Trip emission calculation**: Another key challenge is that there are many different business models. For example, asset-heavy and asset-light tour operators differ greatly in terms of their emission profiles (as shown in Exhibit 7). Consequently, there are hardly any standardised methodologies for calculating trip emissions, thus requiring tour operators to develop an own customised approach.

Aviation:

1. **Availability of decarbonisation solutions:** The most promising decarbonisation solutions for aviation are based on the development of sustainable aviation fuels (including power-to-liquid options in the long-term), and the possibility for new aircraft technologies, such as hydrogen-powered or electric aircraft. Today, these technologies are not available at scale as they either do not exist yet or if so, only in form of prototypes.
2. **Affordability of decarbonisation solutions:** Other promising decarbonisation solutions which are already available today are still very cost intensive and therefore would require massive investments from both the private and public sectors. For instance, even the most cost competitive SAF available today (that is, "HEFA") is still approximately three times more expensive than conventional jet fuel.
3. **Fragmented regulatory landscape:** With different regional regulatory regimes (e.g. European Green Deal, CORSIA, regulations of the Biden Administration), there is an increasing need for global standardisation and incentives to support the transition to a net zero aviation industry, specifically in terms of mandates and blending regulations for SAF usage as well as clear environmental and social standards to ensure climate benefits and avoid unintended negative consequences from SAF production.

Cruise:

1. **Availability & prioritisation of decarbonisation solutions**: The most promising solutions for cruise decarbonisation, such as lower carbon shipping fuels (e.g. LNG) or green hydrogen, are not available at scale, yet. Given the competition from other sectors, including road and aviation, sourcing sustainable drop in fuels will be a challenge for the cruise industry. A promising development is the recent proposal submitted to IMO from a group of governments to establish a $5 billion USD research fund, including a new International Maritime Research and Development Board (IMRB), to accelerate the introduction of zero-emission technologies for maritime transport. The proposal has broad support from the cruise industry.
2. **Reporting Scope 3 emissions**: Although Scope 1 emissions remain a priority, measuring Scope 3 emissions is a challenge for cruise companies due to a lack of standardisation and data access. Given that the amount of Scope 3 emissions can be quite significant, and the regulatory framework might change, this can be considered as a risk for the cruise industry.
3. **Fragmented regulatory landscape**: With different regulatory regimes across geographies, there is a need for international standardisation and incentives to support the transition to net zero. Concerns about potential disruption of business operations in certain regions also exist due to the fragmentation of regulations, leading to different requirements in terms of environmental restrictions with too little time to adapt to the needed standards.

OTAs/TAs:

1. **Information on sustainability for travellers:** Many OTAs/TAs face challenges to provide information about the footprint of travel products in a consistent way and across multiple platforms. Hence, there is a need for a standardised methodology, ideally based on quantitative estimates rather than just qualitative descriptions.
2. **Definition of Scope 3 emissions**: The question about which sources of emissions should be included in Scope 3 is still under discussion for OTAs/TAs, given these tend to account for their biggest share of emissions. For instance, most of the OTAs/TAs account for staff travel, but not consumer travel. While OTAs/TAs may not be responsible for their reduction, agreement exists that these emissions should at least be known.
3. **Leadership buy-in**: There appears to be a lack of leadership support and a limited dedicated team to drive the sustainability agenda forward. There is no real regulatory pressure and scrutiny for OTAs and TAs yet, thus drawing the leadership team's attention on other priorities.

At an overarching level, the following areas of support were identified as crucial for achieving net zero:

- **Information Exchange**: More coordinated platforms and hubs are needed where Travel & Tourism companies can share and discuss methodologies, best practices, case studies, etc. with peers within and beyond the sector.
- **Guidance & Advisory**: More guidance would be appreciated via publications and advisory on topics, including target setting, decarbonisation strategy development & implementation and carbon measurement & reporting.
- **Regular Updates**: There is a need for regular updates on existing and upcoming regulations & policies, official measurement and reporting standards, and emerging technologies with respect to decarbonisation.
- **Data & Insights**: There is a need for trustworthy data and insights for example to calculate Scope 3 emissions accurately or to benchmark themselves to their peers.
- **Government support**: More collaboration with, and support from government, including financial incentives, are needed for all Travel & Tourism industries to enable and strengthen businesses on their net zero journey.

Status Quo - Key Takeaways

The key takeaways from the status quo analysis are summarised below:

Footprint

While Travel & Tourism has a significant potential to contribute to the global net zero journey, the focus industries differ significantly with respect to their footprint, due to the different business models and corresponding emission profiles. What's more, there is a lack of comprehensive and validated estimates for the sector as a whole and its industries.

Climate Commitments

Of the 250 Travel & Tourism companies analysed, approximately 42% have a public climate target out of which approximately 20% have a target aligned with SBTi. Yet, among the public climate targets, there is great heterogeneity with respect to multiple aspects, such as the chosen target metric, the target date and baseline, or the emission reduction commitment, which complicates transparency and comparability.

Challenges & Need for Support

Key challenges across the five industries centre around emission measurement and reporting, especially Scope 3 emissions, the fragmented regulatory landscape and lack of government support, insufficient budgets for a net zero transition and dependency on infrastructure. Yet, businesses also face industry-specific challenges. Areas where the sector is looking for support include platforms to share case studies and best practices, updates on regulations and policies, official standards and methodologies, and new decarbonisation technologies and solutions.

Overall, there is strong need for further guidance with respect to both setting "the right" mid- and long-term net zero targets as well as developing strategies to attain these targets.

The Role of the Public Sector

Comprehensive and coordinated government support, both locally and internationally, is required to decarbonise the Travel & Tourism sector. Commonly identified challenges for businesses where governments have an important role to play, include a fragmented and rapidly evolving policy and regulatory environment, a lack of incentives, unavailability of new technologies and/or markets, and dependency on public infrastructure development.

Key recommendations for governments to address these challenges are:

1 Show clear commitments

and targets for climate action in Travel & Tourism and align tourism policies and targets with SDGs, Nationally Determined Contributions (NDCS) and climate policies. Reward companies that publicly commit to bold action and create incentives for renewable energy, greater efficiency, circularity, and net-zero strategies. Set clear and strong long-term policies that create a safe operating environment for investments and goal setting. Increase transparency by establishing, for instance, Measurement, Reporting, and Verification (MRV) systems, which ensure environmental integrity, avoid double counting, and provide markets with information on climate risks and opportunities.

2 Prioritise sustainable infrastructure

and retrofitting of ports, airports, energy grids, etc. Travel & Tourism infrastructure can be decarbonised in the construction phase (e.g. raw materials with a low carbon footprint and the use of local materials and labour) as well as the operational phase (e.g. retrofitting facilities with solar panels and energy efficient appliances). Public procurement of infrastructure that incorporates sustainability requirements can support better resource management and efficiency throughout the value chain.

3 Develop and foster partnerships

for collaboration across the Travel & Tourism value chain and ensure the inclusion of SMEs. Many climate challenges can be overcome through joint research, activities, and the products and services of other private sector actors. In the insurance sector, for example, large insurance companies may provide weather-index risk to SMEs, who otherwise lack access to safety nets in the event of a climate shock.

4 Facilitate business transition

to a low carbon economy through training, upskilling, and capacity building on climate adaption and mitigation, and include vulnerable groups such as women and youth. Support identification and uptake of digital tools that help to identify climate risks, to measure and monitor emissions, and to mitigate its impacts.

5 Support required research

to improve the monitoring of climate impacts in the Travel & Tourism sector. More reliable evidence will allow for better decision-making regarding investment, planning, policy development, and marketing, etc.

6 Promote inclusive carbon market mechanisms

including cap and trade and voluntary transactions, as components of larger strategies to achieve the long-term goals of the Paris Agreement. Carbon markets can deliver real emissions abatement and drive ambition, but only when rules are clearly defined, designed to ensure that transactions reflect actual reductions in emissions, and are supported by arrangements to track progress and provide transparency.

7 Develop supportive fiscal policies and financial instruments

(and disable harmful ones) to foster sustainable, innovative, and new technological solutions. This should include research, development and deployment of such, to increase climate action and resilience. Ensure that fiscal measures encourage, incentivize and reward practices supporting green and inclusive development and that they are coordinated to avoid contradictory effects, for example by adjusting erratic, rigid regulations that create entry barriers for green innovators or by removing subsidies for out-dated technologies.

8 Provide investments and finance

for actions that strengthen and protect the natural resource base on which tourism depends. The conservation of biodiversity, natural ecosystems and landscapes, which are all key for building more resilience to climate change, can be supported through Nature-based Solutions (NbS) and carbon-sinks, among others.

A NEW TARGET FRAMEWORK for the TRAVEL & TOURISM NET ZERO JOURNEY

This section presents a new target framework with decarbonisation corridors for three different clusters of Travel & Tourism businesses, indicating that net zero could be achieved even before 2050 among certain industries if more ambitious targets are set and differentiated decarbonisation approaches are followed. The potential implications of these proposed corridors are outlined and the existing and potential carbon reduction targets for the Travel & Tourism sector are examined, including interim milestones per focus industry.

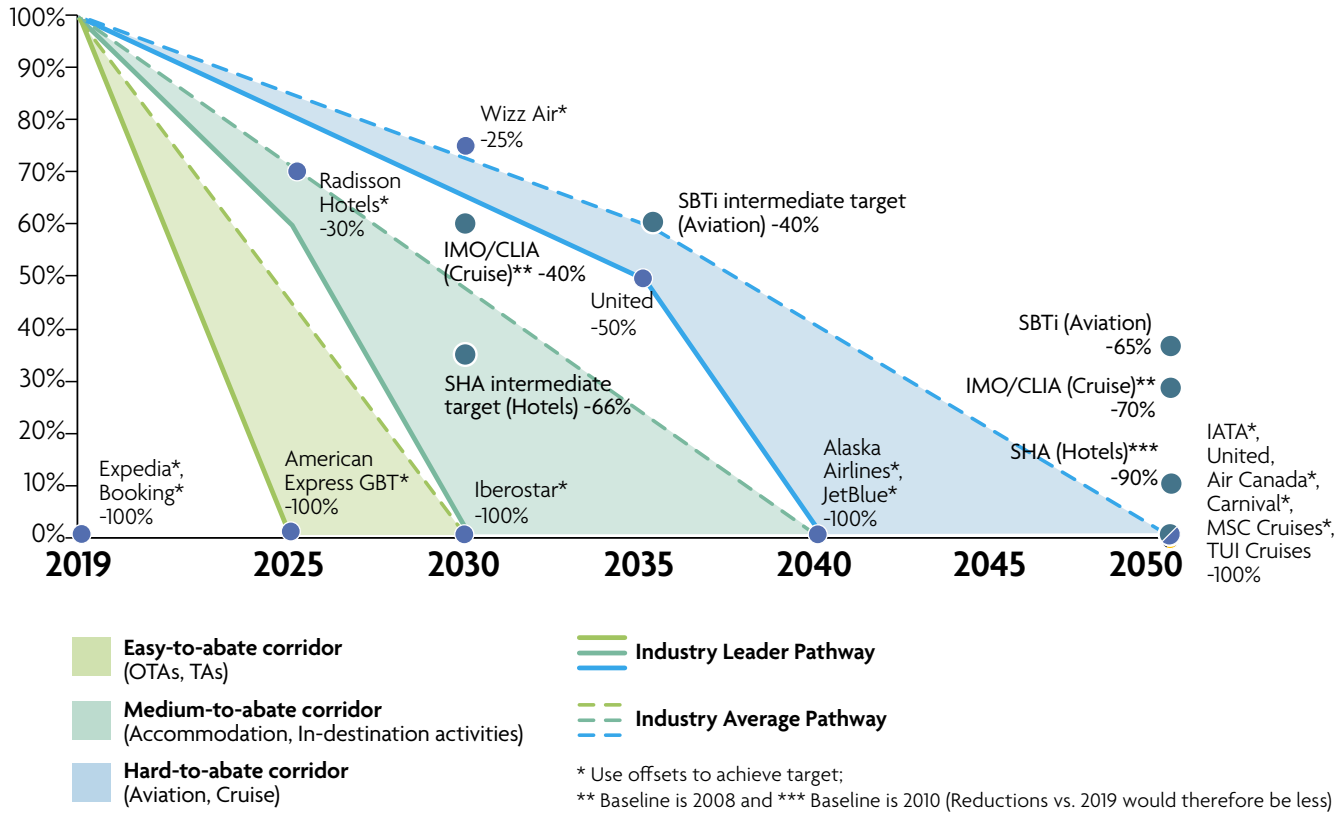
Target Corridor Framework

Given Travel & Tourism's variety of business models, emission profiles, and decarbonisation journeys, it can be assumed that not all businesses and industries will need until 2050 to reach net zero. To address this heterogeneity and highlight the associated opportunities, a new target corridor framework is proposed (see Exhibit 11).

The presented target corridors provide guidance for the mid- and long-term until 2050, illustrating what overarching sector pathways for different Travel & Tourism industries from today's emissions levels to net zero could look like. In sum, the framework proposes that all businesses, where feasible, should aim to reach net zero as soon as they possibly can, rather than just aiming for the 2050 deadline. This will accelerate the overall net zero journey and increase the probability that the sector as a whole will actually reach the 2050 target.

The key metrics used in the framework are carbon intensities. Based on businesses and industries' ease to abate emissions, three target corridors are proposed. The widths and trajectories of the target corridors reflect the industry average (dotted line), as well as the industry leaders and their more ambitious intensity targets (closed line). Industry targets from authorities like SBTi and industry associations are also included to demonstrate the alignment of the corridors.

Exhibit 11: **Decarbonisation Target Corridors for the Travel & Tourism Sector**[40]



Note: IMO/CLIA carbon intensity target baselined against 2008 levels and SHA carbon intensity target baselined against 2010 levels. For developing the target corridors, existing guidance, such as SBTi, SHA (Sustainable Hospitality Alliance) as well as public company targets were reviewed. The proposed targets consider that emission reductions are prioritised up to at least the SBTi targets and only residual emissions beyond that may be offset via carbon removal.

While most businesses analysed fall into the corridor delineations, examples of businesses and relevant associations with targets falling outside of the corridors are also shown to highlight the diversity of existing targets.

Which Travel & Tourism businesses fall potentially into which corridor?

1 **The Easy-to-abate target corridor**
Applies to businesses with a relatively low carbon footprint, and a high potential to decarbonise quickly due to their asset-light business model. For instance, it includes OTAs and TAs with asset-light business models and thus few Scope 1 emissions. This target corridor allows a net zero target to be achieved by 2030 or earlier.

2 **The Harder-to-abate target corridor**
Applies to businesses with a higher carbon footprint and a lower potential to decarbonise quickly, yet with relatively low dependency on fossil fuels and innovative technologies. Accommodation or in-destination activities can be allocated in this corridor. Consequently, a more ambitious net zero target by 2040 can also be set for businesses in this target corridor.

3 **The Hard-to-abate target corridor**
Applies to businesses with a high carbon footprint and a low potential to decarbonise quickly, due to their asset-heavy business model and low maturity of the technologies needed to achieve low or zero emissions, such as cruises or airlines. Consequently, this target corridor has the lowest rate of reduction, achieving a net zero target in 2050.

Emission scopes included in the framework

This framework captures Scope 1 and 2 emissions. Scope 3 emissions, in alignment with SBTi guidelines, are only part of the framework for organisations for which they represent more than 40% of total footprint. Tour operators, OTAs & travel agencies, and accommodation may fall into this category (see Exhibit 11).

Scope 3 emissions of asset-heavy companies, mostly in aviation and cruise, tend to represent a lower share of total emissions and are mostly driven by asset manufacturing processes, upstream and downstream emissions from fuel, staff travel, and shipment of goods to cruise ships. While some of these businesses started setting targets for Scope 3 emissions, there are no clear guidelines on how to distribute manufacturing emissions through the lifespan of the asset. This is likely to shape in a way that mirrors asset financial depreciation, spreading the emissions over time based on forecasted asset utilisation and asset lifespan.

While the framework presented in Exhibit 11 only captures Scope 3 emissions in line with SBTi guidelines, companies are encouraged to disclose and set decarbonisation targets across the whole spectrum of emissions (Scope 1, 2, 3).

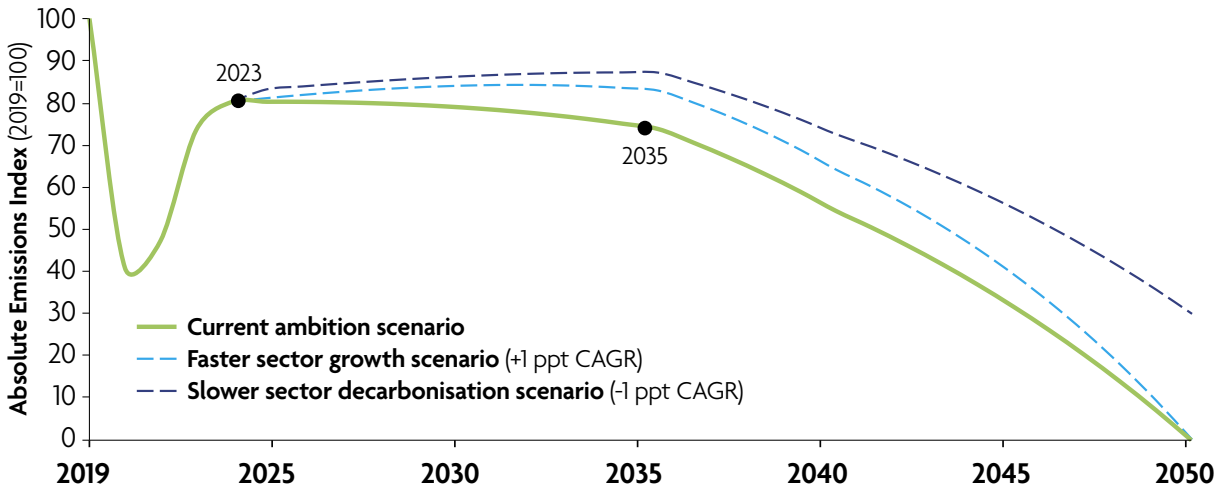
Absolute Emission Outlook

There are different forecasts relating to the level of recovery of Travel & Tourism volumes in the coming years. While leisure travel will likely rebound more quickly to 2019 levels, business travel recovery is expected to be slower in part due to increasing climate commitments of businesses and the ability to do a portion of business virtually[41].

Exhibit 12 illustrates example scenarios for absolute emissions, accounting for the impact the pandemic on the sector with an assumption that approximately 90% of 2019 demand levels will be achieved by 2023. Recent development will allow more inefficient assets, such as airplanes and cruise ships that have been retired during the pandemic, to remain out of use, thus making the emissions savings certain players obtained over the past 18 months more permanent. Additional savings are expected to come from the general prioritisation of sustainability and focus on climate action from more businesses.

Considering the sources of emissions savings, approximately 80% of 2019 total emissions are assumed for 2023. Growth from that point onwards is estimated applying a 3% compound annual growth rate (CAGR) for aviation[42] and a 5% CAGR for all other industries in the Travel & Tourism sector[43] (current ambition scenario).

Exhibit 12: **Estimated absolute Travel & Tourism sector emissions following industry targets**[44]



Note: Industries included are Accommodation, Aviation, Cruise, and OTAs (total emissions in 2019 = 1,320 million tCO2). Decarbonisation rates are weighted compounds of carbon intensity rates for the focus industries as show in the target corridor framework (see industry average pathways illustrated in Exhibit 11). CAGR estimate for aviation is 3% (IATA, 2021) and for Travel & Tourism, and assumption of 5% has been made based on previous (pre-pandemic) annual growth rates of Travel & Tourism (UNWTO, 2020).

Between 2023 and 2035, absolute emissions of the focus industries are estimated to only decrease moderately remaining at an approximate 80-75% of 2019 emission levels. While it is estimated that the rate of decarbonisation is unlikely to yield significant reductions during that time, from 2035 onwards the sector can expect to significantly accelerate the speed of lowering carbon intensity and therefore total emissions. This will be mostly driven by sufficient availability of SAF and new aircraft technology given the relatively high emissions of aviation compared to other industries. In this context, achieving a 50% reduction of absolute emissions by 2030 (as stated by SBTi, Race to Zero and Glasgow Declaration) on a full sector level seems unlikely, with aviation and cruise expected to have difficulties with this interim target. However, based on the target corridors, it is assumed that most other Travel & Tourism industries will be able to reach this goal.

Testing the model for sensitivities shows a significant impact in medium term emissions. Increasing annual sector growth by 1 percentage point (ppt) without changing the assumed decarbonisation rate, results in a rise of total emissions until 2035. However, the net zero sector goal will be achieved by 2050 in this scenario. In contrast, if sector growth is left unchanged but the annual decarbonisation rate is lowered by 1 ppt, total emissions will fall short of the 2050 net zero sector target, staying at about 30% of the 2019 baseline.

In contrast to a scenario in which all industries/businesses only aim for achieving net zero in 2050, the target corridor scenario (current ambition scenario) is characterised by a more direct pathway to net zero, where emission reduction starts earlier thereby leading to a less aggressive reduction rate in the later part. This will help catalyse action, activate positive ambition loops between public and private actors, avoid the risk of high costs related to adapting reactively to climate regulations, and minimise the risk of not achieving the 2050 net zero goal.

Industry leaders may find it harder than other sector participants to achieve the additional medium-term intensity reduction targets as their baselines are lower. However, these businesses will reap the benefits associated with lower emissions in the short term and will be able to continue doing so if reinvesting some of the benefits strategically to maintain a leading position.

Implications

The target corridor framework highlights existing differences between easy-to-abate, harder-to-abate, and hard-to-abate industries. As these differences present opportunities to achieve net zero in some areas and industries before 2050, the framework proposes ambitious pathways for businesses in all three corridors. More specifically:

- **Businesses falling within corridor 1** ("easy-to-abate") should aim to achieve **net zero by 2030 or sooner** and target a 50% emissions intensity reduction or higher by 2025.
- **Businesses falling within corridor 2** ("harder-to-abate") should aim to achieve **net zero by 2040 or sooner** and target a 60-70% emissions intensity reduction or higher by 2030.
- **Businesses falling within corridor 3** ("hard-to-abate") should aim to achieve **net zero by 2050 or sooner** and target a 25-30% emissions intensity reduction or higher by 2030.

There are a number of leading companies in each industry that are already committing to targets of this ambition level. While working towards these targets, businesses should apply an "**Avoid–Reduce–Remove**" logic, whereby they first try to avoid or reduce their emissions, before pursuing ways to offset their remaining emissions – ideally via carbon removal activities. In the short-term, other forms of offsets are encouraged but in the medium to long term the recommendation is for carbon removal activities of an increasing quality and permanence (see Exhibit 15).

Businesses with elements and linkages to a variety of different Travel & Tourism industries will have to orient their targets proportionally to the share of their operations in these industries. This applies to tour operators and OTAs with accommodations, transport, in-destination activities all being part of their tourism product.

A GUIDE TO DECARBONISE THE TRAVEL & TOURISM SECTOR

To support Travel & Tourism businesses on their net zero journey, this report intends to equip them with an actionable toolkit including an overarching decarbonisation framework, a set of guiding principles, an overview of industry-specific key decarbonisation levers as well as a table of recommended action items.

Decarbonisation Action Framework

The following action framework (see Exhibit 13) intends to provide Travel & Tourism businesses with a structured guide to get started on their decarbonisation journey. The framework aims to serve all Travel & Tourism companies regardless of their specific industry background, laying out the general building blocks each business will likely need. It encompasses four main action areas, each containing the most relevant topics Travel & Tourism businesses have to act on.

Exhibit 13: **Decarbonisation Action Framework**

1. Assess & Define		2. Build & Enable		3. Reduce & Collaborate	
1.1 Carbon Inventory	1.2 Materiality Assessment	2.1 Leadership Involvement	2.2 Finance & Budgeting	3.1 Carbon Reduction	3.2 Carbon Compensation
1.3 Climate Targets	1.4 Net Zero Strategy	2.3 Employee Capacity Building	2.4 Governance & Steering	3.3 Partner Support	3.4 Stakeholder Collaboration

4. Monitor & Report		
4.1 Voluntary Disclosures	4.2 Data & Monitoring Capabilities	4.3 Progress Reporting

1 Assess & Define

The first action area focuses on assessing the current emission profiles and impact areas as well as on defining climate targets and corresponding strategies.

1.1. Carbon Inventory

A first step in the decarbonisation journey of each business is to understand its own carbon footprint and the origin of its emissions as well as how climate change is impacting its operations. A carbon inventory gives an overview of all emissions (Scope 1, 2, & 3) split by source, in turn enabling companies to effectively establish an emissions baseline. An annual GHG inventory can be managed with the global GHG protocol. For many companies, the key challenge is to get valid figures for their Scope 3 emissions. These can either be gathered by engaging with value chain partners, to get the information directly or by conducting own estimations. Carbon calculators can be a powerful tool for this purpose, examples of which can be found in Exhibit 14.

Exhibit 14: **Selected Carbon Calculators**

Industry	Calculator	Link
Aviation	**ICAO calculator for route-level average CO2 estimates**	Link
	Accenture's Aviation Carbon Calculator for flight-level CO_2 estimates	Link
Accommodation	**Hotel Carbon Measurement Initiative**	Link
	Hotel Carbon Footprint Calculator (based on HCMI methodology)	Link
	The Green Key Carbon Calculator (based on HCMI methodology)	Link
	Greenhouse Gas Abatement Cost Model, GACMO	Link
Tour Operators	**CARMACAL**	Link
	Trip Carbon Calculator Methodology	Link
	Carbonocero	Link

1.2. Materiality Assessment

A materiality assessment is a methodology to identify and assess the key sustainability issues that impact a company's business and stakeholders. The main goal is to enhance an understanding of which ESG (environmental, social, and governance) topics a business should focus on. While there is no standard approach for how to conduct a materiality assessment, typically two views are combined to assess how relevant a topic is. The first focuses on the business impacts including growth, cost, and trust. The second focuses on the importance to stakeholders, such as consumers, investors, partners, employees. The result of a materiality assessment is a prioritisation of topics, typically visualised in form of a two-dimensional matrix. There are four main reasons why Travel & Tourism businesses should conduct a materiality assessment, namely, better identification and management of risks, effective reporting and measurement, facilitation of decision making and budget and resources allocation.

1.3. Climate Targets

Companies are advised to set science-based targets to effectively reduce emissions, while specifying long-term and net zero targets. Moreover, when targets are set, they should be regularly reviewed to ensure they remain aligned to climate science. Travel & Tourism companies are advised to set science-based targets, for instance aligned to SBTi. When setting a climate target several components must be defined, including, target metrics, target year and baseline, reduction commitment, emission scopes as well as whether offsetting is allowed or explicitly excluded.

1.4. Net Zero Strategy

Once a climate target has been defined, the next step is to develop a corresponding strategy and roadmap to attain the

target. Travel & Tourism businesses are advised to decide on carbon management strategies that focus on measuring the business's emissions annually, identifying emission reduction opportunities and offsetting the unavoidable emissions. To effectively execute a Net Zero Strategy, a good understanding of one's own decarbonisation levers is needed. Though generic decarbonisation levers can be identified for each Travel & Tourism industry, there is no silver bullet. Ultimately, each business has to define its unique set of key decarbonisation levers. There are, however, global initiatives, including Race to Zero, that connect individual companies and governments to collectively support the shift to a decarbonised economy, as well as industry-specific initiatives, such as The Global Maritime Forums Getting to Zero Coalition.

Further reading on that action area can be found in the Annex **here >** (see Exhibit 30).

2 Build & Enable

The second action area focuses on building the required capabilities and enabling the organisation to execute the defined strategy.

2.1. Leadership & Governance

Effective integration and management of sustainability within Travel & Tourism requires committed leadership, clear direction, and strategic influence. Business leaders should define and build robust governance models to oversee and steer their net zero journey. Given the radical transformation required at the organisational level, a dedicated team with authority will be needed. Appointing a Chief Sustainability Officer will allow for embedding change adaptation and mitigation considerations into core corporate strategy and business[45]. Forming dedicated sustainability teams will also help to both execute the sustainability strategy and integrate it across the entire value chain of the business whilst engaging with various business units, functions, and external stakeholders.

Recognising a climate emergency and building internal support can also be a powerful tool for the Travel & Tourism sector to take action to reduce carbon emissions. Leaders should make the case for decarbonisation based on data and engage employees early to enable buy-in. For such purposes, Tourism Declares supports businesses and organisations in declaring a climate emergency and taking action to reduce carbon emissions[46]. The Glasgow Declaration on Climate Action in Tourism provides an opportunity to accelerate climate action across Travel & Tourism to cut the sector's global GHG in half. Its intent is to urge and enable all travel and tourism stakeholders to sign and demonstrate, for the first time as a united sector, a shared voice and commitment to aligning the sector's climate ambitions with scientific recommendations and international agreements (Glasgow Declaration, 2021).

Given the strong business case for achieving net zero, Travel & Tourism leaders should treat decarbonisation as an opportunity and a driver of value for their businesses. Reducing GHG emissions can not only boost brand reputation and help to attract and retain new consumers and staff, but it also gives a strong signal to investors seeking climate risk and opportunity management. The journey to net zero can also lead to commercial success through new products and services, innovative revenue models and partnerships.

2.2. Finance & Budgeting

Financing and budgets are needed for both adaptation and mitigation efforts. Impact Assessment tools and Environmental Profit & Loss supply chain analyses can help better understand current business impacts and the scope of needed climate action as a starting point. Depending on the individual context and needs, more focus may then be directed to adaptation or mitigation like in the case of Soneva, which introduced a levy of 2% of room revenue in their resorts, which is invested specifically in projects to mitigate CO2[47].

Travel & Tourism businesses should also introduce internal carbon pricing or other mechanisms which provide financial incentives to transition to low-carbon alternatives[48]. It is also advisable to adopt more extensive carbon pricing initiatives, including internal prices on CO2e applied to the procurement of any products or services. Such a mechanism will help steer purchase behaviour towards low-carbon options, support actions of greater environmental awareness and stimulate climate-conscious demand for more sustainable products. It will also provide businesses with a decision-making tool to recognise their exposure to external carbon pricing schemes and direct their business decisions and investments. Businesses are also encouraged to set-up financial mechanisms to speed up the implementation of circular business models, adoption of energy efficient technologies, electric vehicles, and improved waste management infrastructure and technology[49].

However, external governance and regulatory support from governments are imperative to establish a decarbonisation investment-friendly environment. This, in turn, will provide Travel & Tourism industries with strong financial incentives to meet emissions and CO2 reduction targets. Already, thanks to good governance, Etihad has secured a $111 million loan to invest in biofuels, green buildings, waste management and other green initiatives. Similarly, the state-owned Royal Schiphol Group issued a €750 million green bond for investment in sustainability[50].

2.3. Employee Capacity Building

By investing in human capital through sustainability training and development, businesses can enable their employees to better guide consumers, whilst engaging with regulators, contributing to corporate strategy, and continuing the drive towards decarbonisation. Recommended sustainability trainings may cover areas of Climate and Carbon, Circular Economy, Sustainable Cloud, IT and Software and Sustainability Performance Measurement. Further, including net zero targets as part of employee job descriptions, incentives, performance reviews or bonuses could bring tangible sustainability improvements.

2.4. Governance & Steering

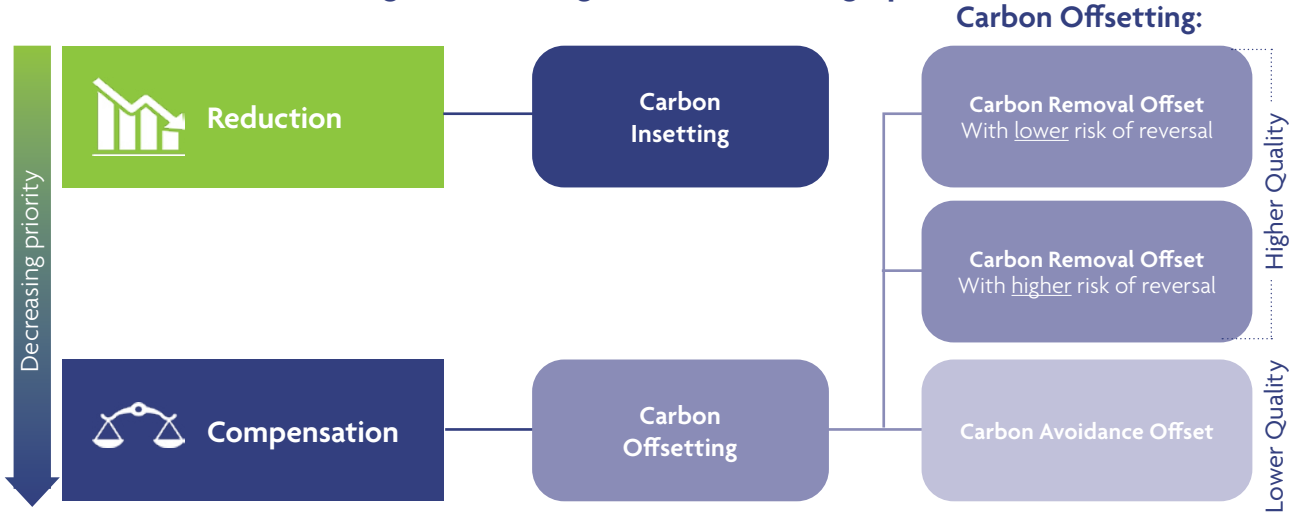
Effective integration and management of sustainability within Travel & Tourism requires having committed leadership, clear direction, and strategic influence. Business leaders are advised to define and build robust governance models to oversee and steer their net zero journey. This requires a radical transformation of the whole organisation, and as such, should be supported by a dedicated team with executive power and authority to enable it. Appointing a Chief Sustainability Officer will allow for embedding change adaptation and mitigation considerations into core corporate strategy and business operations (Glasgow Declaration, 2021). Also forming dedicated sustainability teams will help to both execute the sustainability strategy and integrate it across the entire value chain of the business whilst engaging with various business units, functions, and external stakeholders.

Further reading on that action area can be found in the Annex **here >** (see Exhibit 31).

3 Reduce & Collaborate

The third action area focuses on reducing GHG emissions and collaborating within and beyond the Travel & Tourism value chain. Exhibit 15 illustrates the logic of emissions mitigation strategies (i.e. carbon reduction and carbon compensation) and offsetting options. The term carbon insetting refers to interventions and activities that are designed to avoid, reduce, or sequester emissions upstream or downstream along an organisation's own value chain. Carbon offsetting is a method to compensate carbon emissions outside of one's own value chain. Here, offsetting through carbon removal offsets includes the processes of capturing and storing carbon in living land vegetation, geological and ocean reservoirs or products. Finally carbon avoidance offsets prevent carbon that would otherwise have been released into the atmosphere, for example by preventing deforestation.

Exhibit 15: **Emissions mitigation strategies and offsetting options**



Source: Accenture (2021)

3.1. Carbon Reduction

As Travel & Tourism businesses define, prioritise, and start initiatives to reduce their GHG emissions, they should set up strategies **targeted** at using decarbonisation levers specific to the organisation's emission profile. In doing so, it is imperative to work with partners across the value chain and choose suppliers working to reduce their emissions. In line with this practice, KLM Air France defined a roadmap to carbon reduction that clearly articulates its goal to reduce the CO2 per passenger by 20% by 2020 in comparison to 2011[51].

Businesses which launch sustainability initiatives that have high visibility but little to no actual impact on the carbon footprint, are at risk of being described as unsubstantiated greenwashing. Indeed, product-linked purchases, such as carbon offsets, can be open to criticism, especially if not matched with the business "addressing the big picture"[52]. Travel & Tourism stakeholders should make sure to invest effort in the most effective decarbonisation activities.

3.2. Carbon Compensation

Carbon insetting, which engages value chain and ecosystem partners, should be the priority compensation option for Travel & Tourism business to maximise positive sustainable impacts. Collaboration is already taking place through various industry partnerships, including the recently launched sustainable aviation fuel GHG emission accounting and insetting guidelines by Massachusetts Institute of Technology (MIT) Center for Transportation & Logistics and Smart Freight Centre to facilitate GHG insetting[53].

Following insetting, carbon removal should be prioritised, as it reduces the amount of carbon in the atmosphere permanently and is therefore considered a negative contribution to the carbon balance. Lastly, offsets outside the value chain can be beneficial in the short-term when carbon insets and carbon removal are not available in the required quantities. Such general offsets compensate emissions through carbon avoidance or carbon removal. While carbon avoidance offsets typically represent lower quality since they mainly aim to prevent adding emissions to the atmosphere; carbon removal offsets are seen as higher quality, directly supporting initiatives which remove carbon from the atmosphere. They can be generally seen as either carbon removal offsets with higher risk of reversal, or carbon removal offsets with lower risk of reversal.

General offsets should be replaced over time by insets and carbon removal. Whenever carbon compensation is part of a corporate decarbonisation strategy, it is important to ensure they are of high-quality standard by investing in eligible offset programmes, such as the Clean Development Mechanism following the Kyoto offset mechanism, or voluntary programmes, such as the Gold Standard and Verified Carbon Standard certified projects[54]. This approach is exhibited by the Radisson Hotel Group, using its Radisson Meetings offering at all hotels across the group's seven brands worldwide to automatically calculate and offset any carbon footprint through First Climate[55].

Natural Climate Solutions (NCS), which fall under the umbrella of Nature-based Solutions (NbS) aim at the conversation, restoration and protection of ecosystems and place special emphasis on the various benefits climate actions can have for adaptation, human well-being and biodiversity. These are actions that address GHG emissions, either by reducing them or by sequestering carbon through the growth of carbon sinks. They are a high potential decarbonisation opportunity, with estimates suggesting that they can support up to around 1/3 of the required mitigation for a Below-2°C pathway by 2030, at costs of approximately $10-100 per tCO2[5657]. This can be compared with the price of EU ETS carbon permits at $60 as of October 2021[58], with market consensus that prices must, and will, go up. NCS additionally provide numerous socio-economic and environmental benefits, such as the preservation and restoration of biodiversity, provision of critical ecosystem services, and the support of sustainable livelihoods[59]. In relation to the oceans-related climate change impact, the Iberostar Group aims to offset at least 75% of GHG emitted by Iberostar's operations by 2030, combining nature-based blue carbon offsets with other restoration and protection programs[60]. Still, further research in NbS for climate change mitigation is required as broader adaptation strategies will be increasingly important going forward.

3.3. Partner Support

Decarbonisation is a team sport. Indeed, the focus should be placed not only on reducing one's own footprint but also on leveraging the business's strengths and capabilities to support and enable other partners and ecosystem players to decarbonise. Collaboration and fostering interdisciplinary, multi-level partnerships will help address knowledge gaps on climate change impacts and strategies for adaptation and mitigation[61]. While further gains can be achieved by enabling cross sector-emissions mitigation measures that require collaboration between two or more clusters within Travel & Tourism, it is important to recognise that various Travel & Tourism clusters are at different stages of organisational development.

One example where collaboration between multiple partners across the value chain is required is "embodied carbon", which refers to the carbon dioxide emissions associated with materials and construction processes throughout the whole lifecycle of a building or infrastructure. In Travel & Tourism this could be an airplane, a cruise ship, or some kind of tourism infrastructure. There are significant opportunities to reduce these kinds of emissions. For example through (a) increased efficiency of the materials used (e.g. replacing high carbon with low carbon and recycled materials); and (b) more efficient production processes (e.g. shifting to low carbon technologies, raw materials, and energy carriers)[62]. The Travel & Tourism sector has a clear role to play in this area especially via procurement.

3.4. Policy & Stakeholder Collaboration

Shifting effectively to a more sustainable Travel & Tourism model will largely depend on public-private collaboration. Public support can help to ensure policy alignment integrating climate mitigation and adaptation, biodiversity, and pollution concerns in tourism policies, strategies, and initiatives[63]. For this purpose, cross-industry alliances such as Clean Skies for Tomorrow Coalition provide a global mechanism for executives and public leaders to transition to carbon-neutral flying[64]. An example of such an effort is the ambition statement to accelerate the supply and use of SAF technologies to reach 10% of global jet aviation fuel supply by 2030, which will help to put the global aviation sector on the path to net zero emissions by 2050[65]. Such initiatives should focus on decoupling Travel & Tourism's growth from the increased use of natural resources and GHG emissions and span both internationally and at destination level as well as prioritise inclusive participatory approaches[66].

Further reading on that action area can be found in the Annex **here >** (see Exhibit 32).

4 Monitor & Report

The final action area of the Decarbonisation Framework focuses on monitoring and reporting GHG emissions.

4.1. Voluntary Disclosures

Beyond mandatory disclosures, Travel & Tourism companies are encouraged to voluntarily publish emissions, official net zero targets and commitments and publicly announce them. This not only helps investors, consumers, policy makers and other stakeholders to evaluate the non-financial performance of large companies, but also encourages and enables these organisations to develop a responsible approach to doing business. Setting ambitious objectives may also stimulate the organisational progress towards net zero, as it frequently leads to identification of additional reduction opportunities. Transparency can also attract leadership attention and increase funding for internal decarbonisation projects. Consequently, it can stimulate innovation, enhance employee morale, and help in the recruiting and retention of skilled employees[67]. Businesses wanting to set and announce their ambition statements should follow the best practice examples including developing goals for an absolute reduction in GHG emissions and/or emissions intensity and setting a target year 5 to 15 years from the base year. Such goals should cover businesses' global operations in their geographic boundaries, across all three emission scopes as much as possible[68].

4.2. Data & Monitoring Capabilities

For the Travel & Tourism sector to achieve net zero, it is critical to build capabilities to measure and monitor its carbon footprint regularly and accurately. In general, stationary source emissions monitoring is composed of four elements, including indicators of performance, measurement technique, monitoring frequency and averaging time[69]. The European Commission provides a comprehensive framework on monitoring, reporting and verification of emissions reported under the EU ETS system, ranging from templates for small emitters to additional tools and guidance have been developed for aviation operators[70]. It is also advisable to collect and share data on indicators of state of nature, social disruption, and economy in tourism destinations to inform impact assessments of current practices and planned climate action[71].

Travel & Tourism leaders should encourage, enable, and support businesses and destinations to measure and disclose emissions according to best practice guidelines, such as those available on the One Planet Network website[72]. Third-party operators may support monitoring and management of environmental data in the Travel & Tourism sector. Additionally, developments in Artificial Intelligence (AI) can provide further capabilities in emission data collection, monitoring, predicting, and reducing across all sectors[73], including Travel & Tourism.

4.3. Progress Reporting

For reporting purposes, businesses may use international, European, or national guidelines to produce their statements, including the UN Global Compact, the OECD guidelines for multinational enterprises, ISO 26000 and GRI, amongst others[74]. The UN Global Compact is the world's largest corporate sustainability initiative and offers a practical framework for action and a platform for demonstrating corporate commitment and leadership. Additionally, the Task Force on Climate-Related Financial Disclosures (TCFD) provides recommendations on consistently disclosing climate-related financial risk as well as communicating the information to stakeholders. By following the guidance, Travel & Tourism businesses can more effectively evaluate climate-related risks to their own operations, suppliers, and competitors[75]. Such disclosures can consequently help the sector to develop climate inclusive insurance schemes for risk management[76].

Further reading on that action area can be found in the Annex **here >** (see Exhibit 33).

Decarbonisation Guiding Principles

The following overview (see Exhibit 16) provides a summary of the key messages provided in the Decarbonisation Action Framework to support and guide organisations throughout their net zero journeys.

Exhibit 16: **Overview of Decarbonisation Guiding Principles**

Action Area	Sub-area	Key message
1. Assess & Define	1.1. Carbon Inventory	Use carbon calculators and create carbon inventory to get transparency your carbon footprint
	1.2. Materiality Assessment	Identify and be clear about the issues that matter generally and particularly for your business
	1.3. Climate Targets	Set science-based targets to effectively reduce emissions & specify long-term/net zero targets
	1.4. Net zero Strategy	Develop a strategy & roadmap to attain your net zero target relevant to your industry's decarbonisation levers
2. Build & Enable	2.1. Leadership Involvement	Define an owner of net zero journey, declare climate emergency, and build internal support
	2.2. Finance and Budgeting	Spend 2+1% of your revenue on carbon reduction & adaptation to climate change respectively
	2.3. Employee Enablement	Invest in human capital through sustainability training including climate & carbon, circular economy, IT, and performance measurement
	2.4. Governance & Steering	Define and build robust governance models to oversee and steer their net zero journey
3. Reduce & Collaborate	3.1. Carbon Reduction	Prioritise most effective decarbonisation activities and avoid greenwashing
	3.2. Carbon Compensation	Prioritise carbon reduction, insetting and removal. Carbon offsetting should only be used to compensate remaining emissions
	3.3. Partner Support	Leverage business strengths and capabilities to support & enable other partners to decarbonise
	3.4. Policy & Stakeholder collaboration	Collaborate with governments and regulators to decouple travel and tourism's growth from climate change
4. Monitor & Report	4.1. Voluntary Disclosures	Develop goals for an absolute and/or emissions intensity reduction and set a target 5 to 15 years from the base year
	4.2. Data & Monitoring Capabilities	Build up capabilities to measure and monitor its carbon footprint regularly and accurately, leveraging third-party support and AI
	4.3. Progress Reporting	Share your results publicly based on international guidelines, such as UN Global Compact, the OECD, ISO 26000 and GRI

Decarbonisation Levers

Given the unique emission profile of each of the five Travel & Tourism industries analysed in this document (see Exhibit 7), each industry is characterised by different decarbonisation opportunities. The following section provides an overview of the key decarbonisations levers relevant to the respective Travel & Tourism industries in the medium and long-term, until 2035 and 2050 respectively. The GHG impact assessment of each lever is based on the qualitative inputs from discussions in focus groups, expert interviews and literature reviews conducted as part of this report. The levers are ranked from the highest to lowest impact in the medium term. The impact is expressed in relative terms within each industry and should not be compared across different industries. Finally, the analysis highlights the mechanisms of offsetting the emissions typically adopted by the respective industries.

Decarbonisation Levers for Accommodation

In the accommodation industry, new builds and renovations can generate significant impact and as with most construction, can be wasteful in terms of emissions. A whole-life emissions perspective includes carbon emissions arising from the built environment during both the use of buildings (operational emissions) and their construction (embodied emissions). Building emissions will need to be reduced along their lifecycle through a triple strategy, namely a combination of A.) reducing energy demand (behaviour change and energy efficiency), B.) decarbonising the power supply (e.g. electrification through renewable sources and increased use of other zero-carbon heating technologies), and C.) addressing embodied carbon stored in building materials. Through the first two measures, it could be possible to nearly eliminate carbon emissions from building operations by 2050[77]. Further, better construction and use of buildings could influence 42% of final energy consumption and about 35% of total GHG emissions and 50% of the extracted materials [78]. The accommodation sector could play a key role in influencing better design, retrofit, and use of materials to minimise its impacts. Once in operation, most of the hotel buildings' emissions relate to on-site energy consumptions (see Exhibit 17).

Exhibit 17: **Overview of Decarbonisation Levers for Accommodation**

Decarbonisation Levers	Medium-term GHG Impact (2035)	Long-term GHG Impact (2050)	Examples
Energy efficiency improvements			• Improve building thermal performance • Enhanced building controls • Sustainable hotel design
Operational improvements			• Use less heating/cooling, A/C • Fitting energy efficient lighting
Sustainable procurement and sustainable sourcing			• Sustainably source food and cotton • Encourage low carbon diets at hotels, reduce meat consumption • Sustainable source building materials and retrofit
Transition to low carbon energy			• Purchase or generate renewable energy on-site • Electrification
Reducing waste usage			• Reduce landfilled waste intensity • Measure and reduce food waste

Emissions related to accommodation can be reduced through five key decarbonisation levers:

1. **Energy efficiency improvements** such as encouraging sustainable hotel designs, improving the thermal performance of the building fabric, and implementing enhanced building controls. For new hotel buildings, it is important to carefully consider sustainable designs as part of new buildings' construction.

   GHG impact: Energy efficiency improvements to existing hotel facilities and passive measures will have the highest potential to prevent energy from being wasted in both the medium- and long-term.

2. **Operational improvements** such as operational adjustments to heating and cooling spaces, hot water for laundry and guest usage, upgrading the air conditioning systems as well as fitting more energy efficient lighting and energy saving window films could significantly reduce energy consumption.

   GHG impact: Improving operations in hotels is considered to have the second highest impact on carbon savings in the medium-term, though is decreasing in the long run. Reducing energy at a hotel is the most cost effective and easiest way to reduce carbon[79]. However, since multiple environmental initiatives have already been implemented by hotels to reduce their carbon emissions[80] once the "easy" innovations are implemented, it will become more difficult to meet targets.

3. **Sustainable procurement and sustainable sourcing:** Hotels should encourage their consumers to opt for low carbon and plant-based diets and menus and reduce consumption of highly intensive food products such as meat and dairy. Most purchasing professionals acknowledge the benefits of procuring more circular products, materials, and services, in particular the reduction of water, chemicals, and energy use, hence reducing overall GHG emissions. Circular procurement practices may also help to address structural issues, such as a lack of public transportation which can be mitigated by the set of shared transport services for personnel, or the inadequate waste management facilities in some destinations, which can be incorporated in take-back provisions in contracts to reduce waste to be treated on-site[81]. Where it is not possible to reduce meat consumption, it is recommended to sustainably source all meat and poultry, produce, seafood and cotton at hotels as much as possible. This may be done through partnering with suppliers.

   GHG impact: Sustainable sourcing is considered to have a medium impact in the medium-term, increasing to high impact in the long-term as the energy efficiency increases across the entire value chain.

4. **Transition to low carbon energy:** Electrification is a key lever to reduce Scope 1 emissions, including shifting from boilers to heat pumps, or from gas to induction stoves as well as making the necessary infrastructure adjustments. Further gains can be made by generating renewable energy on site and establishing renewable energy purchase agreements. This includes purchasing energy from third parties separate from the utility grid (or as a para-utility partner) in purchase power agreements (PPAs), Sleeve PPA, or community solar projects.

   GHG impact: Currently, hotel chains are taking first steps to increase sourcing of renewable energy. However, enabling access to affordable renewable energy will require governments to take supporting action which is expected to take time to develop. Therefore, the associated impact of this lever is higher in the long term.

5. **Reducing waste usage:** Actively measure food and water waste and participate in food waste reduction programmes to minimise food waste sent to landfill. An increased focus will need to be geared towards reducing plastic packaging and single-use items where possible.

   GHG impact: Reducing waste and food-related emissions is considered to have a low impact in the medium- and long-term, as this is an area that many hotels have already tried to optimise to the best of their ability.

Stakeholder engagement to reduce emissions along the entire value chain, also outside procurement, is also crucial across all levers. Hotels should thus continuously involve partners as well as encourage them to use science-based targets. Lastly, hotels typically source quality certified offsets for the remaining emissions. However, as tracking of Scope 3 emissions by hotels is generally lacking, it should be better addressed going forward. If Scope 3 emissions cannot be further reduced, likely they will need to be offset.

Further reading on the decarbonisation levers for Accommodation can be found in the Annex **here >** (see Exhibit 34).

Decarbonisation Levers for Tour Operators

Tour Operators can be split into two categories: asset-light and asset-heavy. Considering asset-light Tour Operators, the largest share of CO2 emissions typically comes from employee business travel. For asset-heavy Tour Operators, CO2 emissions mainly come from the assets owned (airplanes, hotels, or ships), which can be reduced following the decarbonisation levers for Aviation, Accommodation, and Cruises, respectively (as described in the corresponding sections). Exhibit 18 illustrates the decarbonisation levers available to the asset-light Tour Operators.

Exhibit 18: **Overview of Decarbonisation Levers for Asset-light Tour Operators**

Decarbonisation Levers	Medium-term GHG Impact (2035)	Long-term GHG Impact (2050)	Examples
Trip footprint			• Choose more sustainable flights • Use alternative modes of transport • Promote more sustainable trips
Office energy & waste			• Switch to renewable energy • Improve energy efficiency of offices • Reduce waste (e.g. paper/ brochures)
Other business travel			• Encourage virtual meetings when trip is not needed • Promote hybrid workplace • Use alternative modes of transport

Asset-light Tour Operator emissions can be reduced by the following three key decarbonisation levers:

1. **Trip footprint:** Employee and traveller emissions related to trips can be reduced by reconsidering modes of transportation, choosing more sustainable flights, or encouraging consumers to opt for more sustainable trips.

   GHG impact: Reducing Tour Operator's trip footprint is likely to have the most significant impact on emission levels in both the mid- and the long-term due to potential improvements in carbon intensity of business travel.

2. **Office energy & waste:** Emissions from office-usage may be lowered by switching to lower carbon sources of energy and using electricity generated (on-site) from renewables as much as possible.

   GHG impact: In general, where office usage cannot be prevented, switching to lower carbon energy sources is considered to have a constant, medium impact in both the mid- and long-term.

3. **Employee business travel:** Emissions from employee business travel may be reduced by creating a hybrid workplace, where employees can work from home, as well as effectively reducing other business travel emissions. Further investments in communication technology should be encouraged.

   GHG impact: Limiting business travel which is not important has been optimised as a consequence of the COVID-19 pandemic. Hence, it is considered to have a low to medium impact in both the mid- and long-term.

The majority of Tour Operators currently focus on achieving carbon neutrality through carbon offsetting strategies. However, carbon neutrality is not enough and undertaking sustainability initiatives targeted at actively reducing emissions is becoming increasingly acknowledged and adopted by Tour Operators.

Further reading on the decarbonisation levers for Tour Operators can be found in the Annex **here >** (see Exhibit 35).

Decarbonisation Levers for Aviation

In aviation, the main source of CO2 emissions comes from fuel. Consequently, the key decarbonisation levers for airlines target a change in energy source or improvements in fuel efficiency as illustrated in Exhibit 19 below.

Exhibit 19: **Overview of Decarbonisation Levers for Aviation**

Decarbonisation Levers	Medium-term GHG Impact (2035)	Long-term GHG Impact (2050)	Examples
Improvements to existing aircraft technology			• Continued fleet renewal • Aircraft optimisation
Development of new aircraft technology			• New electric propulsion technologies • New hydrogen-based propulsion technologies
Operational efficiency improvements			• Flight profile optimisation (efficient routing) • Airport energy supply decarbonisation
Use of Sustainable Aviation Fuel (SAF)			• Bio-Fuels (e.g. HEFA, ATJ) • E-Fuels (e.g. P2L)

Emissions coming from burning aviation fuel can be reduced by four key decarbonisation levers:

1. **Improvements to existing aircraft technology:** Fleet renewal options and aircraft optimisation solutions such as retrofits and weight reductions increase fuel efficiency, effectively reducing air travel emissions[82]. General upgrades such as engine improvements, airframe updates and lighter materials also reduce emissions, by around 20% compared to previous models.

   GHG impact: Continued improvements to existing aircraft technology and operational efficiency improvements will be the most relevant decarbonisation levers for the medium- and long-haul fleet, coupled with sustainable aviation fuels.

2. **Development of new aircraft technology:** New aircraft designs with alternative propulsion technology, such as electric or hydrogen-powered aircraft may in the long-term replace some traditional aircraft with conventional engines. Reducing emissions through new aircraft technologies will first become feasible for short-haul flights.

   GHG impact: New aircraft technologies and designs will likely be introduced towards the 2030's (small, short-range electric aircraft could be in service around 2030, and hydrogen might become a possibility around 2035). These could help to reduce emissions from at least short-haul flights in the long-term.

3. **Operational efficiency improvements:** Flight planning and flight profile optimisation as well as using ground power at airports will further reduce fuel intensity of airline operations.

   GHG impact: Operational efficiency improvements will be the most relevant decarbonisation lever for the short-term, along with continued improvements to existing aircraft technology, yet declining in significance in the long-term due to flattening efficiency curves.

4. **Use of Sustainable Aviation Fuel (SAF)** is a sustainable alternative to fossil-based jet fuel and can be used interchangeably in today's aircraft engines as a drop-in fuel (with a current blend limit of up to 50%, but this will shift to 100% over time)[83]. SAF may reduce emissions by up to 80%, depending on the SAF pathway[84] and indeed by 100% by 2050.

   GHG impact: In the mid- to long-term, SAF is expected to be the critical decarbonisation lever for the aviation industry[85]. This is because SAF will be the only emission reduction option for medium- and long-haul flights, as well as the ability to bring it in to the existing fleet as it becomes available.

Especially in aviation, government support is key to realising the potential of the key levers described above. For example, to increase the use of SAF, governments need to support the development of the SAF industry, including providing subsidies and loan guarantees to expand SAF capacity and lower the pricing gap with conventional fuel, direct research and development activities for local SAF production pathways and new energy industries, and developing supportive and globally aligned policy frameworks[86].

While more permanent technologies and fuels are developed, many airlines promote voluntary carbon offsetting programmes to mitigate their climate impact and to engage environmentally aware consumers. In addition, ICAO's offset scheme (CORSIA) is a United Nations market mechanism agreed between countries whereby airlines flying between participating countries must purchase specific high-quality carbon credits to compensate for emissions that exceed 2019 levels on specific routes[87].

Further reading on the decarbonisation levers for Aviation can be found in the Annex **here >** (see Exhibit 36).

Decarbonisation Levers for Cruises

The vast majority of cruise emissions are due to burning fuel that is used to move and operate cruise ships. Cruise ship operators can utilise some of the decarbonisation levers shown in Exhibit 20.

Exhibit 20: **Overview of Decarbonisation Levers for Cruises**

Decarbonisation Levers	Medium-term GHG Impact (2035)	Long-term GHG Impact (2050)	Examples
Operational efficiency improvements			• Designing ships for greater efficiency (hull technology) • Increasing efficiency via ship ops & maintenance • Onboard operational improvements (HVAC, lights) • Route planning, itinerary optimization
Use of alternative lower carbon fuels			• Liquefied Natural Gas (LNG) as a transitional measure • Bio-LNG (liquefied biomethane)
GHG emissions efficient technologies			• More efficient propulsion systems • Cold Ironing, Shore Power Technology
Transition to batteries and other non-emitting technologies			• Battery systems • Fuel Cell Technologies • Minimizing fuel use/engine emissions

Cruise emissions can be reduced by the following four decarbonisation levers:

1. **Operational efficiency improvements:** Reducing emissions by redesigning ships to enhance efficiency, increasing efficiency via ship operations and maintenance as well as reducing onboard power consumption through Heating, Ventilation, Air Conditioning (HVAC) and lighting upgrades.

   GHG impact: Although the use of alternative fuels and GHG emissions technologies may be considered the two main levers to reduce emissions, operational efficiency improvements are expected to have a more immediate impact in the short term.

2 **Use of alternative lower carbon fuels:** Use of LNG, Bio-LNG, or other alternative sustainable fuels for passenger ships in ports. LNG has virtually zero sulphur emissions, a 95-100% reduction in particulate emissions, an 85% reduction in NOx emissions and up to a 20% reduction in greenhouse gas emissions[88]. LNG is also a fuel that is already available at the required quantities and can hence provide an immediate reduction in GHG emissions. Nonetheless, LNG is only seen as a bridge technology, and further effort needs to be geared towards the development of other low and zero emissions fuels that effectively reduce carbon emissions. Specifically, it will be key for cruise lines to partner with and encourage suppliers to drive sufficient supply and develop new fuel alternatives. Use of hydrogen will have an increasingly likely role as a future energy source.

GHG impact: As most cost from operating a cruise line comes from its fuel usage, cruise lines have already been investing significant effort to find ways to reduce carbon intensity. Consequently, the quick wins in fuel efficiency improvement have already been partially achieved. The next big step will be to find a pathway to alternative sustainable fuels. Hence, the use of alternative low carbon fuels is expected to have medium impact in medium- and strong impact in the long-term.

3 **GHG emissions efficient technologies:** New-build cruise ships should use more efficient propulsion systems, and save additional propulsion energy, for example via hydrodynamic optimization. Additionally, whenever ports offer this facility, cruise operators should be able to use sustainable shore side power to plug into the local power grid and shut down the engine to reduce cruise emissions.

GHG impact: The development of GHG emissions efficient technologies is expected to have medium impact in medium- and stronger impact in the long-term, along with the use of alternative low carbon fuels.

4 **Transition to non-emitting technologies:** The use of battery systems, fuel cell technologies and hydrogen-powered engines have the potential to reduce fuel use and are currently being explored. Specifically, green hydrogen produced from renewable sources such as offshore wind is seen as an alternative fuel to lower the emissions in the shipping sector.

GHG impact: Although the transition to non-emitting technologies is currently in early stages of development, its impact may be greater in the longer term, driven by innovation and technological breakthroughs.

Lastly, individual cruise lines are voluntarily launching carbon offset programs to compensate for their residual carbon footprint and reach carbon neutrality goals based on Scope 1 emissions, which tend to account for ~95% of a cruise line's footprint.

Further reading on the decarbonisation levers for Cruises can be found in the Annex **here >** (see Exhibit 37).

Decarbonisation Levers for OTAs & TAs

For OTAs/TAs, the largest share of CO2 emissions relates to offices and data centres. Amongst travel companies, there is a lack of consensus on whether they should include their travellers' footprint as part of their Scope 3 emissions. Since these businesses have limited control over most emissions related to travel booked via their platforms, they are hesitant to set net zero targets. Still, OTAs and TAs may use decarbonisation levers as illustrated in Exhibit 21.

Exhibit 21: **Overview of Decarbonisation Levers for OTAs & TAs**

Decarbonisation Levers	Medium-term GHG Impact (2035)	Long-term GHG Impact (2050)	Examples
Lower carbon energy sources			• Switch to lower carbon energy sources • Use on-site renewables
More sustainable business travel			• Use alternative modes of transport • Choose more sustainable flights

Office improvements			• Office space optimization • Operational efficiencies • Technological upgrades • Leasing energy-efficient buildings
Purchase Goods & Services			• Encouraging sustainable procurement • Lowering the carbon footprint of supplier premises, data centres, use of cloud computing rather than on-premises infrastructure, equipment usage, etc.
Consumer and partner education on sustainability			• Creating awareness and helping clients and consumers get insight into the estimated footprint of their (travel) choices

When focussing on carbon emissions for OTAs and TAs, emissions can be reduced by the following five key decarbonisation levers:

1. **Lower carbon energy sources:** Reducing Scope 2 emissions by increasing energy efficiency by switching from fossil fuels to lower carbon energy sources and converting standard grid mix energy contracts to renewable energy contracts.

   GHG impact: Reducing office related emissions by lowering carbon energy sources is most impactful in the mid- and long-term since offices are the highest emissions source for OTAs and TAs.

2. **More sustainable employee business travel:** Encouraging and supporting staff to opt for alternative modes of transportation (e.g. rail) and where flying cannot be avoided, choosing more sustainable flights based on estimates provided by carbon calculators.

   GHG impact: This is considered to have the second highest reduction impact on OTAs and TAs emission levels. Further air travel decarbonisation benefits may be offered by commercialisation of Sustainable Aviation Fuel.

3. **Office improvements:** Office space optimisation efforts, carrying out efficiency upgrades in the highest emitting offices as well as leasing more energy-efficient buildings.

   GHG impact: Office related improvements are important but of lesser significance in the longer term, as the low hanging fruit have likely been exhausted.

4. **Purchased goods & services:** Encouraging sustainable procurement by working with partners and aligning on sustainability targets. OTA Scope 3 emissions may be reduced by lowering the carbon footprint of supplier premises, data centres, using cloud computing rather than on-premises infrastructure, equipment usage, etc.

   GHG impact: Sustainable procurement is considered to have a low CO_2 impact in the medium-term, yet growing to medium impact in the long-term, driven by digitalisation and use of more efficient cloud computing as opposed to on-premises infrastructures.

5. **Consumer and partner education on sustainability:** Enabling decarbonisation in Travel & Tourism by creating awareness and helping clients and consumers get insight into the estimated footprint of their (travel) choices.

   GHG impact: Sustainability education is expected to have low CO_2 impact in the medium-term as its impact falls outside of the travel agencies' direct control. However, OTAs and TAs play a key and visible role in enabling the decarbonisation of the Travel & Tourism sector through collaboration with supply chain partners, creating awareness on sustainability concerns and educating consumers on their travel emissions footprint.

Large online travel companies, such as Booking.com and Expedia, are generally offsetting their environmental footprint to reach carbon neutrality. Some OTAs have also created carbon-offset strategies with the idea to offset past emissions of their operations. Generally, it is accepted that carbon offsets are a viable temporary solution to compensate for emissions that have not been reduced, though the priority should be on emission-reduction plans.

Further reading on the decarbonisation levers for OTAs & TAs can be found in the Annex **here >** (see Exhibit 38).

Overview of Potential Actions

The following action tables (Exhibits 22 – 26) intend to provide tangible ideas on where to focus efforts on net zero carbon emissions in the short, medium, and long term and which level of impact to expect from the activities.

Exhibit 22: **Action Items for Accommodation**

Action Item	Key Lever	Description	Time Horizon	GHG Reduction Impact
Eliminate the use of plastics and reduce packaging materials	Reducing waste usage	Preventing waste by reducing single-use plastic from the entire operations chain.	Short/ Medium	Low
Purchase key ingredients of the food value chain in a sustainable way	Sustainable procurement and sustainable sourcing	Ensuring that the key ingredients are sourced from sustainable and organic (certified) sources facilitates improving biodiversity as it allows to eliminate the species at risk from the value chain.	Short	Low
Source components of the food value chain locally	Sustainable procurement and sustainable sourcing	Sourcing of the key ingredients from the local suppliers allows to avoid negative transportation effects, depending on production methods and energy matrix.	Short	Medium
Reduce food-related emissions	Sustainable procurement and sustainable sourcing	Promoting plant-based menu items, reduce meat consumption, including in the meetings and events.	Short	Medium
Adapt high-efficiency appliances	Energy efficiency improvements	Replacing existing light fixtures with LED bulbs, HVAC, and outdated cooling systems, introduction of variable frequency drives, boiler/chiller upgrades, and occupancy sensors.	Short	High
Introduce intelligent energy management systems	Energy efficiency improvements	Installing of smart energy management systems to prevent unnecessary energy use by automatically turning off the lights, closing curtains, or adjusting the thermostat when rooms are unoccupied.	Medium	Medium

Implement waste management systems	Reducing waste usage	Optimising waste sorting, recycling, reusing, composting, converting to energy to increase the materials diversion rate. Using the proper waste disposal streams for hazardous waste.	Medium	Medium
Introduce water management systems	Operational improvements	Equipping hotels with water regulators and low-flow dispensers, optimising swimming pool water consumption. Installing systems to recover rainwater & recycle grey water. Optimising hotels' irrigation schedule & redeveloping the property's evaporative tower system. Training housekeeping & kitchen staff to reduce water waste.	Medium	Medium
Introduce electric vehicle charging stations	Operational improvements	Offering electric vehicle charging stations to the hotel guests.	Medium	Low
Introduce shared mobility services	Operational improvements	Reducing of single-occupancy vehicle commutes by introducing shared transport facilities at the largest sites to reduce CO2 footprint & traffic congestion.	Medium	Low
Introduce on-site renewable power generation	Transition to low carbon energy	Generating renewable energy on site as an integral part of meeting the residual building load. Includes wind power, solar power, ground sources of heating & cooling, and biofuels.	Long	High
Introduce near-site renewables	Transition to low carbon energy	Opportunities for hotels to purchase energy from third parties separate from the utility grid (or as a para-utility partner) in PPAs, Sleeve PPAs, or community solar projects.	Long	High
Increase electrification	Transition to low carbon energy	Transitioning from certain energy use being powered by fuel burning, to being powered by electricity, e.g. installing electric-driven chillers and heaters, storing electricity on-site.	Long	High
Design sustainable buildings	Energy efficiency improvements, climate resilience, & ecosystem protection	Incorporating sustainability criteria into the concept specification and design of the hotels.	Long	High

Exhibit 23: **Action Items for Tour Operators**

Action Item	Key Lever	Description	Time Horizon	GHG Reduction Impact
Minimise the necessity of business travel	Other business travel	Limiting business travel through promotion of use of video conferencing and remote working.	Short	Medium
Eliminate single-use plastic from operations	Trip footprint / Office energy & waste	Preventing waste e.g. by reducing single-use plastic from the entire operations chain.	Short	Low

Reduce printed materials / brochures	Office energy & waste	Reducing manufacturing of brochures and other consumer materials e.g. by introducing an app that acts as a 'one-stop-shop' for the consumers.	Short	Low
Reduce energy consumption in the office	Office energy & waste	Introducing efficiency upgrades: movement detection control systems, LED lighting, inclusion of energy performance clauses in contracts with vendors.	Short	Low
Optimise ground fleet	Trip footprint	Increasing the efficiency of the coach fleet by investing in fuel-efficient vehicles, installing fuel consumption monitoring systems, optimising the routes, and training drivers on more efficient driving techniques.	Medium	Medium
Use more sustainable means of transport	Trip footprint	Optimising itineraries where possible so that the travellers can use more environmentally friendly transportation (e.g. buses, trains, or more sustainable flights).	Medium	Medium
Support alternative solutions for business travel	Other business travel	Encouraging staff to opt for alternative modes of transportation and choosing more sustainable flights if air travel cannot be avoided.	Medium	Medium
Measure sustainability performance of retail shops	Office energy & waste	Roll out of a dashboard providing with real-time information of how each shop is performing against its energy targets.	Medium	Low
Collaborate with the local partners to sustainably manage natural resources	Trip footprint	Partnering with the in-destination partners on the environmental initiatives and local management of natural resources.	Medium	Low
Promote sustainable trips	Trip footprint	Encouraging consumers to opt for more sustainable trips, e.g. by promoting experience-based approach to travel that emphasises connection to local culture, making conscious decisions and helping the environment by reducing travellers' global footprint.	Medium	Low
Ensure hotels meet criteria for sustainability certification	Trip footprint	Ensuring partner hotels have credible sustainability certification, building sustainability into the concept specification of the hotels and setting specific sustainability targets.	Medium	Low
Educate hotels on environmental topics	Trip footprint	Showcasing global sustainability standards through publishing environmental guidelines, providing easy-to-follow action plans on carbon reduction, developing a support forum for hotels to share sustainability learnings and drive improvements.	Medium	Low

Assess sustainability performance of the tours	Trip footprint	Assessing the sustainability criteria of the tours, such as completion of sustainability training by the guide or including sustainability-friendly practices for the visitors.	Medium	Low
Increase energy efficiency in the office	Office energy & waste	Moving from usage of fossil fuels to low carbon energy sources and using electricity generated from on-site renewables.	Long	Medium
Introduce an offsetting system for travellers	Trip footprint	Including the possibility to offset carbon emissions released on a journey.	Long	Medium

Exhibit 24: **Action Items for Aviation**

Action Item	Key Lever	Description	Time Horizon	GHG Reduction Impact
Implement state-of-the-art aircraft technology for flight profile optimization	Operational efficiency improvements	Introducing innovative software (e.g. optimising the climb speed profile of the flight to reduce fuel consumption without affecting the duration of flight, considering aerodynamic parameters, engine efficiency and wind/temperature gradients) and services (weather forecast model retrieved in real-time from the global aviation weather provider).	Short	Low
Implement necessary infrastructure adaptations for Airport energy supply decarbonisation	Operational efficiency improvements	Ground infrastructure adaptations for radical new aircraft concepts. Provision of necessary infrastructure for clean electricity supply, hydrogen, and battery recharging facilities at the airports.	Medium	Low
Fleet renewal - Replace old fleet with the more sustainable aircraft	Improvements to existing aircraft technology	Replacing the retired aircraft only with the environment-friendly fleet.	Medium	Medium
Improve performance of the existing aircraft	Improvements to existing aircraft technology	Retrofitting of the in-service aircraft with the evolutionary technologies or building them into existing types as they come off the production line over the next years.	Medium	Medium
Deploy SAF	Use of Sustainable Aviation Fuel (SAF)	Reducing fossil fuel consumption through introduction and acceleration of use of sustainable aviation fuels.	Long	High
Commit to SAF offtake agreements at an early stage	Use of Sustainable Aviation Fuel (SAF)	Long-term investment in SAF offtake agreements at an early stage.	Long	High
Set up the policy infrastructure required for SAF acceleration	Use of Sustainable Aviation Fuel (SAF)	Introducing best practices regarding the sustainability standards, accounting procedures, logistics, communication, effective policy, and business case development.	Long	High

Accelerate research into radical airframe designs, electric and hydrogen propulsion	Improvements to existing aircraft technology	Exploring the potential and participating in the evaluation of advanced technologies. Accelerate product cycles and innovation speed with enhanced digital capabilities, keeping the affordability of new products in focus.	Long	Medium

Exhibit 25: **Action Items for Cruises**

Action Item	Key Lever	Description	Time Horizon	GHG Reduction Impact
Deploy lower carbon fuels	Alternative Low Carbon Fuels	Introducing use of sustainable shipping fuels and advanced fuel technologies. Relying on LNG for primary propulsion, as it has a lower carbon emission profile, eliminates sulphur, and significantly improves overall air emissions. Nevertheless, the overall goal for cruise lines should be to help enable the development of new technologies and fuels, including biofuels, green methanol, as well as potential zero carbon green hydrogen and ammonia.	Short	High
Install shore-side power capability wherever possible	GHG Emissions Efficient Technologies	Encouraging port developments and activities globally to facilitate reduction of GHG emissions from shipping, including provision of ship and shore-side/on-shore power supply from renewable sources, infrastructure to support supply of alternative low carbon and zero-carbon fuels, and to further optimize the logistic chain and its planning, including ports. Although many cruise lines are already fitting shore power capability as standard, some ports may not have the systems to provide it.	Short	Medium
Optimise engine operational performance of the ship	Operational Efficiency Improvements	Operating single engine running, or drifting on passage, so that the engines can run at their most efficient speed – all of which cuts energy demand.	Short	Medium
Analyse the use of itineraries optimisation as a measure	Operational Efficiency Improvements	Applying changes to itineraries affecting speed, routes and distances travelled to reduce fuel consumption and CO2 emissions per passenger night.	Short	Medium
Further improve the energy efficiency framework	GHG Emissions Efficient Technologies	Improving the existing energy efficiency framework with a focus on Energy Efficiency Design Index (EEDI) and Ship Energy Efficiency Management Plan (SEEMP), taking into account the outcome of the review of EEDI regulations. Energy efficiency improvements are also driven by proposed new regulations by IMO for existing ships, i.e. EEXI and CII, leading to a substantive difference to the way the industry operates cruise ships.	Medium	Medium

Develop technical and operational energy efficiency measures for the ships	Operational Efficiency Improvements	Developing the energy efficiency measures for both new and existing ships, including consideration of indicators in line with the three-step approach that can be utilized to indicate and enhance the energy efficiency performance of shipping, e.g. Annual Efficiency Ratio (AER), Energy Efficiency per Service Hour (EESH), Individual Ship Performance Indicator (ISPI), Fuel Oil Reduction Strategy (FORS).	Medium	Medium
Test fuel cells technologies	Transition to batteries and other non-emitting technologies	Participating in the joint venture projects to develop and test a decentralized energy network and a hybrid energy system with a new generation of fuel cells for use in oceangoing passenger vessels.	Long	High
Develop the hybridity of the ships	Transition to batteries and other non-emitting technologies	Fitting of batteries to enable generators to be switched off at dock, at anchor and when in proximity to inhabited areas.	Long	High
Explore alternative power systems	Transition to batteries and other non-emitting technologies	Cooperating with suppliers to co-develop and introduce battery storage systems on a cruise ship that can power the ship's propulsion and operation for limited periods of time.	Long	Medium

Exhibit 26: **Action Items for OTAs & TAs**

Action Item	Key Lever	Description	Time Horizon	GHG Reduction Impact
Prioritise critical business travel	Streamlining business travel	Prioritising business travel and opt for use of video conferencing and remote working when not needed.	Short	Medium
Introduce shared mobility services	Streamlining business travel	Reduction of single-occupancy vehicle commutes by introducing shared transport facilities at the largest sites.	Short	Low
Reduce energy consumption in the office	Office improvements	Introducing efficiency upgrades, such as movement detection control systems, LED lighting, inclusion of energy performance clauses in contracts with vendors.	Short	Low
Optimise server utilisation rate	Office improvements	Migration of products and data storage to the cloud to improve overall energy efficiency.	Medium	Medium
Launch CO2 calculator of the travel	Consumer and partner education on sustainability	Providing travellers with an estimate of emissions released during a journey at the booking stage. Possibility to compare emissions from different itineraries or means of transport.	Medium	Medium
Support alternative solutions for business travel	Streamlining business travel	Encouraging staff to consider more sustainable modes of transportation.	Medium	Medium

Source sustainably purchased products & services	Purchased goods & services	Encouraging sustainable procurement through working with supply chain partners and aligning on sustainability targets.	Medium	Low
Display accommodation partners' sustainability certificates & initiatives	Consumer and partner education on sustainability	Displaying officially approved sustainability certifications and chosen sustainability initiatives to provide consumers with transparent information.	Medium	Low
Increase energy efficiency in the office and deploy renewable energy	Lower carbon energy sources	Moving from usage of fossil fuels to low carbon energy sources, converting standard grid mix energy contracts to renewable energy contracts in the office locations.	Long	Medium
Improve Power Usage Effectiveness of the data centres	Office improvements	Improvement of the energy-efficiency of the data centres, renewal of the low-voltage distribution units, implementation of more efficient cooling machines and optimisation of intelligent control systems.	Long	Medium
Introduce sustainable product bundles	Consumer and partner education on sustainability	Creating sustainable product bundles (e.g. sustainable flight + hotel + airport transfer) to meet increasing consumers' expectations towards sustainable travelling.	Long	Medium
Introduce carbon-offsetting system & reward consumers choosing offsetting options	Consumer and partner education on sustainability	Including the possibility to offset carbon emissions released on the journey and rewarding the consumers choosing carbon offsetting options with points that can be redeemed in environmental initiatives.	Long	Medium
Create dashboards for business trips	Consumer and partner education on sustainability	Introducing dashboards for business travellers, including a full analysis of their carbon footprint, comparing it to previous years, benchmarking against other colleagues, and the business.	Long	Low
Introduce post-trip CO_2 reporting tools	Consumer and partner education on sustainability	Possibility to obtain aggregated post-trip CO_2 emissions reports.	Long	Low
Introduce educational cooperation programmes with accommodation providers	Consumer and partner education on sustainability	Rolling out programmes for accommodation partners that support them in becoming more sustainable, sharing guidance and best practices via educational opportunities, including sustainability handbooks and dedicated content.	Long	Low

CONCLUSION & CALL TO ACTION

Conclusion

While progress towards decarbonisation has been made, this research highlights the diversity within the sector, differences in context as well as variety in commitments across industries and companies in Travel & Tourism. **The sector must continue developing long-term strategies and targets** consistent with the Paris Agreement and latest scientific recommendations, aligned to relevant national and international policies and strategies, to achieve net zero emissions goals.

The analysis showed that **42% of the Travel & Tourism businesses analysed currently have publicly announced climate targets**. **Though many targets are not yet based on the latest science**, it is promising to see that many businesses are currently in the process of revising and adapting their targets to reach standards like those set by SBTi, and many others, putting climate action much higher on their priority lists. Of course, key for monitoring this progress will also be the transparent sharing of these activities through more harmonised methodologies.

Progress will depend on addressing various challenges, with some being common for all focus industries and some more specific for individual ones. These include **emission measurement and reporting**, especially Scope 3 emissions, the **fragmented regulatory landscape, dependency on infrastructure and insufficient budgets**. Moreover, the special challenges for SMEs in the sector, which make up the majority of Travel & Tourism businesses, will require strong commitments from all stakeholders to increase collaboration and ensure inclusiveness.

There are clear opportunities for Travel & Tourism to achieve net zero in many areas and industries even before 2050. However, as businesses define their commitments based on their respective corridors, they will require support, particularly for those businesses with hard-to-abate emissions. As the sector pushes for the highest ambitions and an acceleration of climate action overall, **it will have to join forces to strengthen the innovation needed** for new technologies and alternative fuels to **decouple Travel & Tourism growth rates from resource use and emissions for a net zero future.**

There is no doubt, time is of the essence and our actions of today define our world of tomorrow.

Call To Action

Given that higher ambition targets and differentiated decarbonisation approaches can lead to achieving net zero in many areas of the Travel & Tourism sector even before 2050, **we therefore call on businesses to increase their ambitions where possible:**

1 Set the right baselines and emission targets now to achieve individual & sector goals:

For all Travel & Tourism businesses:

- ✓ Where possible, halve emissions by 2030. It is recognised that not all industries may be able to achieve this, but ambitions should be set as high as feasible.
- ✓ Join important sector-wide initiatives that include accountability mechanisms and help with clear guidance, such as the Race to Zero Campaign, the Glasgow Declaration on Climate Action in Tourism, and Tourism Declares A Climate Emergency.
- ✓ Create climate action plans now that help guide the implementation of activities required to achieve targets, which are regularly reviewed and adapted, if needed.
- ✓ Strive for a complete net zero future for the sector by 2050.

For all Travel & Tourism businesses that do not have defined climate targets yet:

- ✓ Start the target definition process and ensure that targets are science-based and aligned with relevant national and international policies and strategies.
- ✓ Set ambitions as high as possible, in alignment with corridor aspirations, yet keep them feasible.
- ✓ Gather data to establish required baselines to track progress over time.

For all Travel & Tourism businesses that already have baselines and a set target, but not science-based:

- ✓ Review and update your targets so they are science-based, building on the aspirations of the decarbonisation target corridor that correspond most to each individual business model.
- ✓ Revise your targets and decarbonisation approaches regularly and finetune them regularly.

2 Monitor and report progress:

- ✓ Share your defined climate targets with the public.
- ✓ Define emission boundaries for all three scopes and monitor them as accurately and regularly as possible.
- ✓ Share your monitoring results and progress on a regular basis, ideally, annually, with the public.
- ✓ Share your lessons learned and best practices with the Travel & Tourism community.

3 Collaborate within and across industries:

- ✓ Join and regularly participate in industry alliances and networks to share and learn from others' climate actions and experiences and stay up to date with latest developments.
- ✓ Engage especially in methodological dialogues to ensure alignment in monitoring approaches and drive standardised frameworks for reporting.
- ✓ Support other Travel & Tourism businesses that are not as far advanced, in particular SMEs, and learn from those that are.
- ✓ Encourage and support the integration of Travel & Tourism into local/regional/national climate plans and strive for alignment with them.

4 Provide finance and investment required for the transition:

- ✓ Understand your financial needs to achieve your climate targets.
- ✓ While one or the other may be the focus, invest in both mitigation and adaptation measures.
- ✓ Adopt more extensive carbon pricing mechanisms to help steer climate-conscious purchase behavior.
- ✓ Invest in and support low-emissions solutions, circularity, Nature-based Solutions etc. within the business and along the value chain.
- ✓ Advocate for more government and regulatory support for Travel & Tourism businesses, including SMEs, to strengthen investment-friendly environment for climate action. This includes campaigning for financial incentives to industries where decarbonisation represents major costs.

5 Raise awareness and build capacities on climate:

- ✓ Invest in human capital through sustainability training and development.
- ✓ Prioritise building climate expertise in-house but also recognise when external support is needed.
- ✓ Advocate, where needed, to move climate action and sustainability on top of the business priority list. Appoint a CSO (ideally at the c-level) and establish dedicated sustainability teams where needed.
- ✓ Make sustainable options the default for customers with an option to opt-out, instead of opting-in.
- ✓ Set up accountability mechanisms for change within the business so that climate commitments and activities endure potential future system changes (e.g. merger & acquisition or change of leadership).

WTTC's Commitment:

In the context of the presented research results, **WTTC, in its role as the leading advocate of Travel & Tourism, will continue to support the sector on its journey to net zero** together with its partners.

To do so:

- WTTC will aim to expand and continue its research on climate commitments and progress made to ensure regular insights, including through its Economic Impact Reporting (EIR).
- Efforts will also be made to develop specific tools that facilitate the access to needed information, such as on policies and regulations.
- The organisation will continue to advocate for differentiated decarbonisation approaches and encourage Members to open-source emission calculation methodologies and decarbonisation strategies and openly report on impacts and results.
- WTTC will strive to strengthen collaboration with, and support of, relevant organisations and initiatives within and beyond the sector.
- Finally, with the objective to close the gap between discussions around biodiversity & nature conservation with the discussion around climate action and decarbonisation, WTTC is committed to work with Travel & Tourism stakeholders to **ensure that the sector has a voice in the relevant discussions around these important issues and support the sector in translating the outcomes into tangible actions.**

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For further information, please visit:
WTTC.org/Initiatives/Sustainable-Growth

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ANNEX:

For further reading, glossary of terms and report methodology can be found in the Annex **here >**

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