



# CARBON MECHANISMS RESEARCH

Policy Paper No. 02/2023

## The Demand-Side Perspective on the Voluntary Carbon Market Insights from the German-speaking Tourism Industry

Max Schulze-Steinen and Nicolas Kreibich

## Disclaimer

The positions expressed in this paper are strictly those of the authors and represent neither the opinion of the Wuppertal Institute nor of the German Federal Ministry for Economic Affairs and Climate Action.

The Wuppertal Institute is carrying out the “Carbon Mechanisms” project on behalf of the German Federal Ministry for Economic Affairs and Climate Action.

### **Internet**

[www.carbon-mechanisms.de](http://www.carbon-mechanisms.de)

### **Contact**

Max Schulze-Steinen

Email: [max.schulze-steinen@wupperinst.org](mailto:max.schulze-steinen@wupperinst.org)

Wuppertal Institute for Climate, Environment and Energy GmbH  
Döppersberg 19 • 42103 Wuppertal • Germany

[www.wupperinst.org](http://www.wupperinst.org)

This work is published under Creative Commons Attribution –  
NonCommercial – NoDerivatives 4.0 International license |

<http://creativecommons.org/licenses/by-nc-nd/4.0>

September 2023

Cover Photo:

[Louis Hansel](#) auf [Unsplash](#)



# **The Demand-Side Perspective on the Voluntary Carbon Market**

## Insights from the German-speaking Tourism Industry

Max Schulze-Steinen and Nicolas Kreibich

# Contents

<b>Summary .....</b>	<b>II</b>
<b>1 Introduction .....</b>	<b>1</b>
<b>2 Status quo.....</b>	<b>2</b>
<b>3 VCM and tourism .....</b>	<b>5</b>
<b>The companies in the sample .....</b>	<b>5</b>
<b>Claims .....</b>	<b>6</b>
<b>Motivations .....</b>	<b>7</b>
<b>Impact and knowledge.....</b>	<b>8</b>
<b>Quality and reputation.....</b>	<b>9</b>
<b>Expectations and looking ahead .....</b>	<b>10</b>
<b>4 Conclusions and outlook.....</b>	<b>12</b>
<b>Bibliography .....</b>	<b>15</b>

# Summary

By consuming resources, the tourism industry also plays a role in exacerbating the global climate crisis. In 2019, the tourism sector was responsible for 2.6% of Germany's emissions and 3.3% of national energy consumption.

Growing public awareness of environmental issues and the urgent need to take action are also putting companies under increasing pressure to make an active contribution towards reducing harmful greenhouse gases. In addition to businesses implementing climate change mitigation measures within their own value chains, purchasing carbon credits on the voluntary carbon market (VCM) plays an important supplementary role.

This paper explores the part played in the VCM by tourism companies in German-speaking countries, considers possible motivations for carbon offsetting and examines impacts and future developments. With the help of a random sample of eight qualitative interviews with actors from the tourism industry, the authors identify key arguments and place them in the context of current debates about the VCM.

The main findings from the interviews can be summarised in five clusters:

**Claims.** Claims of being *carbon neutral* or *climate positive* and the like can give a company a competitive advantage and deliver an eye-catching message about how it is contributing towards climate action. However, the risk of attracting accusations of greenwashing also discourages some companies from making carbon neutrality claims.

**Motivation.** There are various reasons why companies choose to offset their emissions. In addition to corporate social responsibility (CSR) and corporate values, actors pointed to their own

dependence on an unspoiled natural environment, media attention and anticipated government regulations and standards as important motivations.

**Impact and knowledge.** Knowledge about the VCM and its dynamics differs from company to company. Regardless of how much they know, all of the companies collaborate with offset providers and draw on their expertise. At the same time, each company has a sustainability strategy in which – by its own account – the mitigation hierarchy is maintained and carbon offsetting only plays a supplementary role.

**Quality and reputation.** There have been repeated revelations about the poor quality of the carbon credits traded on the VCM. Companies are aware of these dynamics, but rely on collaboration with their respective offset partners when it comes to quality assurance. No company interviewed intends to withdraw from the VCM. Reputational risks are likewise believed to be low, as carbon offsetting is usually not communicated prominently and the quality of the credits purchased is considered to be high.

**Expectations concerning future developments.** The future of the VCM remains unclear, but the actors interviewed think that reorganising and redesigning the voluntary carbon market offers more potential than developing a new, unfamiliar (market) mechanism. Since the narrative of carbon neutrality also figures prominently in political discourse, the interviewees believe that more and more companies will be active in the VCM in the future.

These insights and the underlying dynamics of the VCM suggest four courses of action:

1. Develop **guidelines** for the tourism sector or the individual tourism product groups.

Pioneering companies and policymakers could draw up these guidelines in collaboration, but it is important that civil society and the scientific community are involved. The outcome of the process could serve as a handbook for a more harmonised approach to the use of the voluntary carbon market. In addition to strengthening integrity, this greater standardisation could also improve the ability to compare companies.

2. Expand the **support available to companies**. Since companies lack expertise in the field, they are exposed to a potential conflict of interest on the part of offset providers. As well as selling carbon credits, these providers also advise companies on matters relating to climate strategy. The consultancy services from offset providers could be complemented by an offer of support from the state, potentially building on the guidelines developed previously. Such an offer could also give companies a framework in which to share their experiences, allowing actors within the tourism industry to discuss strategies for dealing with shared challenges and develop ways for the industry to adapt its use of the VCM to the framework conditions of the Paris Agreement.
3. Inform companies about the **contribution claim approach** and thereby encourage its acceptance. This model brings internal emission reductions to the

fore so that the VCM can be used in a manner compatible with the Paris Agreement. Many aspects of the approach are still in the development stage, but government backing could accelerate its attractiveness. So far, many companies see no advantage in the contribution claim model over conventional offsetting, partly because the term carbon neutrality comes up repeatedly in political goals and discussions. A progressive proposition regarding contribution claims as an alternative to conventional offsetting could change this situation.

4. Call for **greater political intervention**. One possibility in the medium term is the introduction of an obligation for companies to take action to combat climate change beyond their own value chain. This could make involvement in the VCM more widespread and bring the industry into greater alignment with the requirements set out by the Paris Agreement.

# 1 Introduction

This paper explores the perspectives and motivations of companies in the tourism industry in terms of their involvement in the voluntary carbon market (VCM). With the help of interviews conducted with experts from different parts of the sector, we examine what drives companies to purchase carbon credits. The experts are either owners or employees of a company that buys carbon credits on the VCM.

To prepare the paper, we contacted companies operating in different tourism product groups and conducted eight semi-structured telephone interviews. More specifically, we spoke to four companies offering accommodation services and/or food and beverage serving services, one company from the sport, recreational and cultural services sector, two travel agencies and one company that provides air passenger transport services.

Given the size of the tourism industry and the diversity of its product groups, it is not possible to claim that the results of this qualitative research are truly representative. Instead, the interviews conducted in this study offer a selection of up-to-date insights into what motivates tourism companies to participate in the VCM. Each of these insights is placed in the context of current debates about the VCM. At the same time, the paper explores whether and how companies are taking the VCM's new operating environment into account when formulating their climate strategies.

Table 1 indicates the product group to which each of the conducted interviews relates. Statements from the interviews can thus be considered in the context of the respective product groups within the paper.

Interview	Product group
Interview 1 (I1)	Sport, recreation and culture
Interview 2 (I2)	Accommodation service provider
Interview 3 (I3)	Travel agency
Interview 4 (I4)	Accommodation service provider
Interview 5 (I5)	Air passenger transport service
Interview 6 (I6)	Travel agency
Interview 7 (I7)	Provider of accommodation services and food and beverage serving services
Interview 8 (I8)	Accommodation service provider

Table 1: Interviewed companies' product groups and interview abbreviations.

## 2 Status quo

The World Tourism Organization (UNWTO) defines tourism as a “social, cultural and economic phenomenon which entails the movement of people to countries or places outside their usual environment for personal or business/professional purposes” (UNWTO, n.d.-a). In many places, tourism plays an important role in the local economy and creates jobs. In 2019,<sup>1</sup> the German tourism sector and the 2.8 million people it employed (6.1% of the total internal workforce) generated revenue of approximately €124 billion and thus about 4% of Germany’s gross value added (Destatis, 2021, p. 8).

The tourism sector comprises a large number of different areas and their consumer goods and services.<sup>2</sup> Table 2 presents the tourism product categories that make up the German tourism sector.

Alongside the positive socio-economic effects of creating value and jobs, tourism can also have negative impacts on sustainability in a local area. Accommodation is often associated with high levels of land consumption, green spaces are intensively irrigated in dry regions, leisure activities put pressure on local biodiversity and mass tourism damages sensitive ecosystems. In 2019, the energy required to produce or provide tourism-related goods and services amounted to 3.3% of Germany’s final energy consumption. Air passenger transport services consumed the most

Internationally defined tourism products	Accommodation services
	Food and beverage serving services
	Railway passenger services
	Road passenger transport services
	Water passenger transport services
	Air passenger transport services
	Transport equipment rental services
	Travel agencies and other reservation services
	Sport, recreation and culture
Other tourism products <sup>1</sup>	Health services
	Food
	Fuel
All remaining goods and services <sup>1</sup>	Remaining goods
	Remaining services

Table 2: Tourism product categories. Own table based on Destatis (2021, p. 12).

energy (domestic flights only). This energy consumption was responsible for the emission of 24.6 million tonnes of CO<sub>2</sub> equivalents. This figure represents 2.6% of Germany’s greenhouse gas emissions in 2019, with transport services (including air passenger transport services) accounting for a large share (Deutscher Tourismusverband, German Tourism Association, 2022, p. 5).

Table 3 shows the GHG emissions by product group and reveals a decrease in total emissions

<sup>1</sup> The coronavirus pandemic meant that no representative data could be collected for the reporting years after 2019. However, there are signs of an increase in tourism activity following the pandemic (Destatis, n.d.).

<sup>2</sup> To provide more details, the goods and services consumed by tourists are presented in tourism satellite accounts (TSAs). These allow information to be examined that is “either not provided or only available in a frag-

mented form” in the national accounts (Destatis, 2021, p. 10). The consumer products that make up a satellite account are grouped together in accordance with the International Recommendations for Tourism Statistics (United Nations & World Tourism Organization, 2010, Annex 4). The supply side creates certain product categories for this purpose that are particularly relevant to tourism.

(Destatis, 2023). This decline may be attributable to efficiency gains, but it could also be down to Germans taking more trips abroad instead of travelling domestically. Foreign travel is not recorded in the national accounts.

	2015	2016	2017	2018	2019
<b>Tourism product groups</b>	1,000 tonnes of CO <sub>2</sub> equivalents				
<b>Accommodation services</b>	985	1 075	1 138	1 020	1 123
<b>Food and beverage serving services</b>	1 945	1 921	1 855	1 601	1 668
<b>Railway passenger services</b>	291	331	296	264	265
<b>Road passenger transport services</b>	3 906	3 540	3 343	3 027	2 849
<b>Water passenger transport services</b>	423	725	572	424	368
<b>Air passenger transport services</b>	7 191	7 505	8 125	8 227	7 873
<b>Transport equipment rental services</b>	22	22	24	24	25
<b>Travel agencies &amp; other reservation services</b>	139	121	129	120	129
<b>Sport, recreation &amp; culture</b>	1 899	1 838	1 756	1 627	1 500
<b>Health services</b>	122	126	127	115	123
<b>Food</b>	511	574	566	512	474
<b>Fuel</b>	100	101	73	41	55
<b>Remaining goods</b>	3 724	3 868	3 610	3 482	3 088
<b>Remaining services</b>	6 035	5 987	5 857	5 601	5 077
<b>Total:</b>	<b>27 334</b>	<b>27 734</b>	<b>27 473</b>	<b>26 086</b>	<b>24 616</b>

Figure 3: Own table based on Destatis (2021, p. 56).

Against the backdrop of the deepening climate crisis and the pledges to fight it made by politicians and civil society, many tourism providers are declaring sustainability to be a core development goal. This is partly driven by the intrinsic characteristics of the tourist trade, as it is more dependent on the preservation of an unspoiled natural environment than almost any other sector of the economy. The forest fires and heatwaves in parts of Greece, Spain and Italy – which are among the most popular holiday destinations for Germans – have made the link between tourism, climate change and nature even more apparent in recent years. And just as tourism is reliant on intact natural surroundings, it can only be decoupled from a certain flow of resources to a limited extent, since, by definition, tourism takes place outside one’s usual environment (Umweltbundesamt, German Environment Agency, 2022). As per the *residence principle*, a tourism product can only be taken to the consumer in very limited circumstances, which means that the tourist “must travel to the product and use transport services to do so” (Balaš et al., 2021, p. 35).

Consequently, the UNWTO supports the tourism-specific implementation of the Sustainable Development Goals (SDGs), and the German National Tourism Strategy includes sustainable development as an area of action (Bundesministerium für Wirtschaft und Energie, Federal Ministry for Economic Affairs and Energy, 2021). This development is underpinned by the Glasgow Declaration on Climate Action in Tourism, which was adopted at the UN Climate Change Conference in Glasgow in 2021 (COP26). The Declaration, which the German Travel Association also endorses, makes a commitment “to halve emissions by 2030 and reach net zero as soon as possible before 2050” (Deutscher Reiseverband, German Travel Association, n.d.; UNWTO, n.d.-b). The sentiments expressed by the supply side of the tourism industry are mirrored on the demand side. In a representative survey, 25% of respondents stated that they take

sustainability criteria into consideration when choosing tourist accommodation. However, it must be noted that attention to sustainability criteria achieved the lowest ranking in this survey (Deutscher Tourismusverband, 2022, p. 22).

Nevertheless, sustainability is both increasingly rooted in the tourism sector and reinforced by the processes and objectives of international climate policy. As early as the 1970s, criticism of the industry began to emerge in the German-speaking world in response to the first widespread negative impacts of mass tourism becoming apparent in the Alpine and Mediterranean regions and as part of a critical view of growth in general (Balaš & Strasdas, 2018, p. 17). The approaches proposed by those first critics of tourism usually had a regional focus and sought to minimise the negative impacts on communities and the environment at a local level.

It was only later that the focus of developments broadened to include global climate issues in the context of the flow of resources in the tourism industry (Balaš & Strasdas, 2018, p. 18f). As part of this process, more and more offers were created that follow the principle of ecotourism. The latter is understood as meaning sustainable tourism that minimises the pressure on the environment, strengthens the host region and at the same time ensures guest satisfaction (Bundesamt für Naturschutz, German Federal Agency for Nature Conservation, n.d.). Offsetting emissions also plays a role here. According to a study by adelphi, 50% of the providers of carbon credits count companies from the tourism industry among their clients (Machnik et al., 2023). This also ties in with the German Travel Association's endorsement of the Glasgow Declaration and its net-zero objective, as mentioned above (Deutscher Reiseverband, n.d.).

# 3 VCM and tourism

Tourism companies that offset their climate impact do so primarily by purchasing carbon credits from the VCM.<sup>3</sup> In recent years, this market has developed in parallel to what is termed the compliance market, whose demand is based on the binding mitigation pledges made by the parties to the Paris Agreement. In contrast to the compliance market, the credits traded on the VCM do not have to comply with the international specifications set by the United Nations. A large part of the VCM satisfies its demand through carbon credits issued by private certification standards.

The findings from the eight semi-structured telephone interviews are synthesised below. Insights into the German-speaking tourism industry are thus given by way of example, with particular attention being paid to participation in the VCM. Seven of the companies are based in Germany and one is based in Switzerland.

## The companies in the sample

All of the companies interviewed for this paper are active in the VCM. Many of them claim to be carbon neutral or even climate positive because they buy carbon credits. Companies consider themselves climate positive if they have offset more, in some cases even double, the CO<sub>2</sub> emissions that they have caused.

For each of the companies interviewed, offsetting their CO<sub>2</sub> emissions by purchasing carbon credits and making claims of carbon neutrality as a result are seen as just one part of a more comprehen-

sive sustainability strategy. Other sustainability measures are often targeted, such as buying organic food and using green electricity, as well as efficient building insulation and further improvements in efficiency.

The claims relate to the purchase of carbon credits and have mostly only been incorporated into the companies' sustainability strategies in recent years. All of the companies use established offset providers such as Fokus Zukunft and myclimate. In addition to buying the credits themselves from the offset providers, many companies also take advantage of their consultancy services.

This has implications in terms of project selection and the way greenwashing allegations are handled. Several interviewees stressed the important role played by offset providers as consultants. Most of the companies interviewed are small businesses with fewer than 50 employees, so they do not have the internal resources to build up their own expertise in a dedicated sustainability department, for example. The only exception is the airline (I5), which has sustainability officers. As a result, the job of drawing up and implementing a sustainability strategy often remains the responsibility of the company management, which has to do this while also taking care of day-to-day business. A comparison of the companies reveals different levels of prior knowledge about the VCM, including its advantages and disadvantages and sometimes complex dynamics.

With the exception of the company offering air passenger transport services, larger businesses,

---

<sup>3</sup> Alternatively, companies can purchase credits generated primarily for the compliance market, such as certified emission reductions (CERs) from the Clean Development Mechanism. Another option is to purchase and retire

emission allowances from cap-and-trade schemes like the European Union's Emissions Trading System (see Doda et al., 2021). However, these two options play a minor role compared with the purchase of carbon credits distributed by private certification standards such as Gold Standard.

such as cruise lines and major tour operators, did not reply to interview requests during the data collection process. The level of response from smaller (family-owned) companies with no specially appointed sustainability officers is itself indicative of one reason for participation in the VCM: the (intrinsic) motivation of the person in charge of the business and the company's values. Two interviewees in particular clearly stated that they see carbon offsetting as a means of leaving a healthy and viable environment behind for future generations. This implication of long-term dynamics is in line with the business models in question, as these were multi-generational family firms, one of which also ran an organic farm.

In the following, the insights gleaned from the interviews are presented and placed in the context of the VCM in five topic areas.

## Claims

As public awareness of the climate crisis grows and the tourism industry shifts towards a more sustainable approach, *green claims* that credit a product with a greater degree of sustainability are increasingly common in the various product groups. In addition to statements about holidays that are *close to nature*, *authentic* or *natural*, some companies also make claims relating to the CO<sub>2</sub> emissions of the product in question. Prominent among these are generic claims about *climate neutrality*, *carbon neutrality* or *carbon positivity*, which are attributed to certain products or entire companies in numerous economic sectors, not just tourism (Black et al., 2021; Day et al., 2023).

Companies make claims about either their present situation or their strategy for a certain point in the future. For example, Europe's largest travel group TUI aims to offer climate-neutral cruises by 2030 (TUI Group, n.d.). In most cases, realising neutrality claims involves offsetting emissions by purchasing carbon credits that have

been generated via climate change mitigation measures on the voluntary carbon market (UBA, German Environment Agency, 2018; UNFCCC, 2021).

All of the companies interviewed for this paper are active in the VCM and, with the exception of the airline, each of them reported that they offset at least the same amount of CO<sub>2</sub> emissions as they cause. The range of claims derived from these activities is typical of the non-regulated VCM. After all, depending on the approach, different rules and specifications apply as to the level of ambition and offset quality on which companies can base their claims (Donofrio et al., 2021, p. 19; Michaelowa et al., 2019).

Four of the eight companies surveyed describe themselves as *climate positive* because they offset either double (I2, I4, I8) or 10% more than (I7) the emissions in their greenhouse gas inventory. One company labels itself *carbon neutral* (I1), and two companies (I3, I6) describe their efforts as a contribution to a *climate-friendly trip* and thus deliberately refrain from using the carbon neutrality claim. One company (I3) has made a conscious decision not to use the term *carbon neutral* because of the risk of greenwashing accusations.

The conflict between actively using and not using carbon neutrality claims that emerges from the study sample reflects the wider debate on carbon offsetting. On the one hand, carbon credits can finance climate change mitigation projects and encourage companies to pursue ambitious climate strategies; on the other hand, offsetting can be used to conceal behaviour that adversely affects the climate, and buying credits can divert funds from (usually more expensive) opportunities for reducing emissions within the company's own value chain, as well as frustrating national ambitions (Boon et al., 2007; Harvey, 2023; Kreibich & Hermwille, 2021; MacKerron et al., 2009).

One solution to this conflict could be the establishment of market-wide rules to ensure the high

quality of carbon credits (Brander et al., 2022). On this point, the airline acts differently to the other companies in the sample. It describes the option to make an additional financial contribution when buying a ticket as an investment in climate change mitigation projects and technological innovation, such as research into alternative fuels, and thus as a way of *making flying more climate friendly* (I5). By taking this approach, the company does not commit to any neutrality claim. However, it reported that, with the possibility of *offsetting* flights via credits, it had used a *carbon-neutral flying* claim in the past. Difficulties in realising the claim led the company to cease referring to carbon neutrality in its communications and opt instead for the less absolute framing of *more sustainable flying*. The company also includes investments in fleet modernisation, its use of sustainable aviation fuels and other operational measures aimed at reducing CO<sub>2</sub> emissions under this umbrella.

## Motivations

In contrast to the attention given to the reasons individuals use carbon offsetting, little research has been done into what drives companies to offset their emissions (Engler et al., 2023, p. 3). It is not surprising, therefore, that no systematic analysis is available concerning what motivates companies operating in the tourism sector to participate in the VCM. This could be due to the fact that few businesses in the industry carry out carbon offsetting on their own initiative rather than leaving it up to their customers to do so voluntarily (Zeppel & Beaumont, 2013).

One of the few analyses of the entire private sector's motivations regarding the VCM was presented by Ecosystem Marketplace in their annual report on the status of the VCM (Hamrick et al., 2015). According to this research, the biggest driver for purchasing carbon credits is the buyer's corporate social responsibility (40%), followed by their wish to demonstrate a climate

leadership role (22%), then having a climate-related mission (18%) (Hamrick et al., 2015, p. 20).

However, these motivations can also be translated into competitive advantages when consumers want to make *green purchasing decisions* (Bruhn, 2014; Bruhns et al., 2017). As society becomes more aware of the climate crisis, these kinds of purchasing decisions and the attention paid to sustainability claims are increasing, and companies can use their participation in the VCM to strengthen their strategic position (Baumeister, 2015; Zeppel & Beaumont, 2013).

Companies in the sample confirmed this trend (I3, I7). For example, one company, which was the first in its product group and region to use a carbon neutrality claim as a result of purchasing carbon credits, reported having attracted a great deal of media attention (I1). Another pointed out that their carbon neutrality claim was very advantageous and really good value, given the low price (I4).

However, some of the companies interviewed also referred to an intrinsic motivation and their own environmental values as reasons for purchasing carbon credits, which can be categorised as CSR in a broader sense. Two family-run companies view their commitment to sustainability from a holistic perspective. They want to pass on to future generations not only a viable business but also an intact and healthy environment within which the company and the lives of their descendants will be embedded (I2, I8).

By contrast, one company reported potential competitive disadvantages after it switched from offering (voluntary) carbon offsetting to customers as part of the booking process to pricing it in directly, making its product more expensive than that of its competitors. Here, too, this decision was driven by the company's principles and intrinsic motivation to minimise the pressure on the environment brought about by the company's value creation (I6). This situation is

echoed by the experience of another company in the hospitality industry that has had to set its price for an overnight stay at a level similar to that of a five-star hotel due to the demands of its sustainability concept (I8).

Although sustainability criteria for tourism products have a certain bearing on consumers' purchasing decisions (Deutscher Tourismusverband, 2022, p. 22), most of the companies surveyed are unable to assess definitively whether and to what extent customers care about carbon offsetting (I1, I2, I4, I8). This knowledge could, in principle, have an influence on the companies' own motivation. Companies offering accommodation and food and beverage serving services in particular made similar statements to the effect that *a good organic breakfast is worth more than carbon offsetting*. In contrast to carbon offsetting, this good breakfast, for example, is associated with a direct experience (I4). Two companies (I5, I6) that until recently had made carbon neutrality claims reported that demand for their products did not decrease after they shifted to a framing that puts the focus on *more sustainable travel*. This could also indicate that carbon neutrality claims do not have all that much influence on consumer choices.

As government regulation increases in the wake of national climate action plans, another benefit of carbon offsetting is emerging. Companies in the sample reported that, thanks to their sustainability strategies and by taking into account the mitigation hierarchy that includes carbon offsetting (see below), they are already ahead of other enterprises in areas such as calculating their carbon footprint and complying with building standards (I2, I4) (Umweltbundesamt, 2023).

## Impact and knowledge

Carbon credits and the carbon neutrality claims that can be derived from them are the subject of heated debates. On the one hand, offsets can be

used as a powerful marketing tool, diverting attention away from actual reduction measures within a company's value chain and appearing to substantiate claims that its continued growth is harmless (Eijelaar, 2011). Furthermore, there are no binding regulations that a company has to follow in order to use a carbon neutral claim. Not only can this cause confusion on the part of consumers, but it can also suggest that a (carbon-intensive) product is a problem-free purchase, because the emissions have been offset by carbon credits (Trouwloon et al., 2023). On the other hand, carbon offsets can act as a trigger for greater climate action by companies, and the purchase of carbon credits can contribute towards closing the global climate finance gap. For this to be the case, the mitigation hierarchy must be upheld so that only those emissions are offset that could not be avoided in the first place.

As a matter of fact, all of the companies in the sample also reported on more far-reaching measures, making carbon offsetting the last option to be incorporated into a sustainability concept. It should be noted here that the reduction potentials differ depending on the tourism product. Measures taken to cut emissions included generating or purchasing green electricity (I1, I2, I4), promoting climate-friendly means of transport for shorter distances and even not offering flights under 800 km (I3, I6), improving operational efficiency (I2, I5) and sourcing local products (I4, I8).

At the same time, however, advantage is taken of the option to offset CO<sub>2</sub> in order to maintain carbon-intensive factors in the value chain until a secure political framework for alternatives has been established. The possibility of changing to a different heating system (gas to heat pump) was raised in this context, but one interviewee expressed the view that there are still too many uncertainties involved. As a result, this (small) business decided to put off replacing its gas heating system until the change becomes affordable (I4).

All of the companies stressed that purchasing carbon credits is often cheaper and easier than fully exploiting opportunities to reduce emissions. The availability of (time) resources plays a role here, especially in the case of smaller enterprises, as the planning and implementation of the company's sustainability strategy are usually carried out by the managing director alongside day-to-day business (I2, I4, I8).

However, the VCM's complexity and lack of transparency put time and financial resources under additional strain, which has a particular impact on companies' offsetting decisions. A survey by Engler et al. (2023) shows that many of the small and medium-sized enterprises (SMEs) in Germany generally have limited knowledge about the mechanisms of international carbon markets. As a result, organisations that support the demand-side of the VCM, such as Germany's Development and Climate Alliance (Allianz für Entwicklung und Klima) and the Carbon Credit Quality Initiative, take on special significance. Established NGOs are also responding to the challenges of the VCM by providing advice. For example, WWF has published a guide to how companies can align their climate targets with the Paris Agreement (de Grandpré et al., 2021).

Our sample paints a mixed picture of how well informed businesses are about the mechanisms, dynamics and challenges of the VCM. All of the companies surveyed work with external offset providers who, in addition to selling carbon credits, advise companies on how to use the VCM. Many companies described this as a good, trusting collaboration, which also allowed them to obtain clarification on numerous technical matters (I1, I4). In some cases, communication and peer-to-peer learning among participating companies was also reported, meaning that (local) initiatives and associations can play a supporting role in the implementation of climate targets and in capacity building (I1, I2, I4, I7, I8). In the Allgäu region of southern Germany, for

example, 12 hoteliers have joined forces to scrutinise their CO<sub>2</sub> emissions (I2).

Due to their (close) collaboration with the offset providers, the companies surveyed often voiced their conviction that the carbon credits they had acquired were of adequate quality. Structural challenges on the VCM were mostly not taken into account here. However, two companies were aware of the structural challenges and, of their own accord, declared that they would look into acquiring credits issued with corresponding adjustments as per Article 6 of the Paris Agreement in the future (I3, I5).

## Quality and reputation

In recent years, carbon neutrality claims have increasingly led to debates, criticism and even court rulings. Research by The Guardian and Die Zeit recently revealed that a large number of carbon credits generated from forestry projects and issued under the largest certification standard were not backed by actual mitigations. Carbon neutrality claims from many large companies including Shell and Gucci were based on these credits (Fischer & Knuth, 2023; Greenfield, 2023). Furthermore, in April 2023, the Regional Court of Düsseldorf upheld the charges brought by Environmental Action Germany (DUH) against TotalEnergies regarding false offsetting promises. The company advertised *CO<sub>2</sub>-compensated heating oil* for which, according to the ruling, no "robust causality considerations between the carbon offset project and concrete 'savings' of greenhouse gases" were apparent (DUH, 2023).

Such developments highlight the complexity as well as the level of technical detail involved in effective carbon offsetting and also influence the discourse around the VCM. In the sample, every company was familiar with the discussions about the quality and effectiveness of carbon credits. However, their respective customers rarely

expressed criticism of the carbon offsetting system (I2, I6).

In general, the companies judged this criticism to be unconsidered and directed at their own climate ambition, as *some people do not want to be confronted with the issue of “environment and climate change” on holiday* (I2). Most customers, even after the negative reports about the VCM, tended to be positive about carbon neutrality claims. None of the companies reported an intention to withdraw from the VCM as a result of the discussions. Nor had they heard of any plans by other companies to do so.

Nevertheless, the sample also reveals a mixed picture in this respect. Some companies fear that the developments could jeopardise their credibility (I3, I7); others point to their close collaboration with the offset providers, believing that this ensures the high quality of their carbon credits and that one has to accept that there will always be some *black sheep* (I2, I4). Companies further stated that they intended to use only credits backed by *corresponding adjustments* in the future to be certain of their quality (I3, I5). The purpose of these adjustments is to ensure that the emission reductions are not double-counted.

As regards reputational risks, the airline must be set apart to some extent as it is not only the largest company in the sample but it also operates a carbon-intensive core business. In general, it is not uncommon for aviation businesses to face allegations of greenwashing (Greenpeace, 2022; White et al., 2022). Aside from that, however, none of the interviewed companies reported having encountered serious reputational risks in relation to their participation in the VCM.

Some of the companies commented further that another reason they did not refer to carbon neutrality claims prominently in their communications was because their commitment to

sustainability is part of their corporate identity and there is *no need to make self-evident statements in one’s advertising*. In addition, it was felt that the carbon credits acquired were of high quality because they had been evaluated with the support of the offset partners and their expertise (I2, I4, I6). Nevertheless, two companies stated that one of the reasons for not using a carbon neutrality claim (any longer) was to avoid exposing themselves to reputational risks.

## Expectations and looking ahead

Many stakeholders continue to have high expectations of the voluntary carbon market, seeing it as an important tool for solving the climate crisis, especially because of its potential to engage private actors.<sup>4</sup> At the same time, the future of the VCM in the wake of the Paris Agreement is extremely uncertain; and the question arises as to whether it might in fact run the risk of losing its relevance in the new operating environment.

Especially in the light of negative reporting about the role of forestry projects and criticism of the very principle of carbon offsetting, one has to wonder whether a crisis is emerging that could threaten the existence of the VCM. On the other hand, the survey of the companies revealed a largely optimistic picture. Some of the participants were of the view that the current situation is merely a short-term low from which the market will recover (I5, I7, I8). However, it was felt that this would require transparent clarification (I7).

One company explicitly welcomed the public criticism of forestry projects and anticipated a decline in demand for carbon credits from this type of initiative. However, it also saw a real danger that some actors would withdraw from

market (VCM) will help unlock urgently needed finance and channel it towards reducing and removing billions of ton[ne]s of emissions” (ICVCM, 2023).

---

<sup>4</sup> For example, Chair of the Integrity Council Annette Nazareth points out that “a high-integrity voluntary carbon

the market completely as a consequence of this bad publicity and the reputational risks (I6).

The majority of interviewees were sceptical about the use of alternatives such as the contribution claim approach, confirming the findings of other analyses (Kreibich & Obergassel, 2019; Machnik et al., 2022). In their opinion, establishing an alternative model would be too complicated and the concept of carbon neutrality is already firmly embedded in some cases. For instance, certain companies viewed the carbon-neutral label as a prerequisite for being able to meet the expectations of business customers, who in turn have to fulfil their own CSR requirements (I4).

It is, therefore, no wonder that most companies made it clear that they wanted to continue with the current offsetting model, despite potential reputational risks (I7, I8). Although some did see the problematic issue of double counting as a threat to involvement, the use of carbon credits with corresponding adjustments was regarded as the more promising way to deal with this risk (I1, I6). To ensure the integrity of the credits, one interviewee also stressed the importance of intergovernmental cooperation (I1).

Looking ahead, individual actors called for greater political intervention and stricter industry guidelines. One interviewee, for example, argued for mandatory offsetting by the entire industry, including air passenger transport services, along similar lines to supply chain due diligence requirements (I6). Mandatory carbon offsetting was recently introduced in France for all domestic flights by airlines subject to the EU ETS (Ministry of Ecological Transition, 2023). Another suggestion was the introduction of a dedicated carbon levy to help all actors in the sector contribute to resolving the climate crisis (I3). What these two proposals have in common is a wish to create a level playing field for the industry as a whole.

# 4 Conclusions and outlook

In the face of an escalating climate crisis and growing public awareness of the issue, more and more companies are making carbon neutrality claims in relation to their products and value chains. The purchase of carbon credits via the VCM plays an important role in such claims. This paper looked at companies from the German-speaking tourism sector, using a random sample to examine the reasons why companies participate in the VCM and the extent to which purchasing carbon credits influences sustainable behaviour within these companies and the sector. Through eight interviews with predominantly small and medium-sized enterprises from different tourism product groups, overarching dynamics that are embedded in the developments on the VCM have been identified in five topic areas.

All of the companies participate in the VCM by purchasing carbon credits. On this basis, some companies use generic **neutrality claims** in that they describe themselves or their products as carbon neutral or even climate positive. At the same time, there are also companies that offset all of their recorded emissions but consciously choose not to use a neutrality claim because of the perceived greenwashing risk.

In general, such claims are used to gain a competitive advantage and a leading position in the market. This also applies to some of the companies interviewed for this paper. Further **motivations** included CSR and the values of certain companies that want to pass on to future generations not only a viable business but also an intact environment within which their business model is embedded.

In the **“impact and knowledge”** topic area, the authors examined the companies’ internal processes. This revealed a mixed picture. Each business in the sample has a sustainability strategy in which, according to the companies, the mitigation hierarchy is maintained and carbon offsetting is carried out as the last of several measures. Nevertheless, it is evident that the potential emission reductions differ between the individual tourism product groups. The level of knowledge within the companies about how the VCM functions also varies. Many do not have staff dedicated to the development and implementation of a sustainability concept, which means that activities in the VCM take place alongside day-to-day business. Regardless of their size, each of the companies works with offset partners from whom they purchase consulting services as well as carbon credits.

The companies draw on the expertise of the offset providers because of the challenges of the VCM in terms of the **quality** of the credits and potential **reputational risks** to themselves. In the opinion of the companies interviewed, the close and trusting relationship they have with the providers adequately ensures the quality of the offset credits used. Potential reputational risks were mitigated by not using generic claims or by not communicating carbon neutrality statements prominently.

The **“expectations and looking ahead”** section was framed by the opinion that the VCM will overcome its current challenges. This view stems, on the one hand, from the belief that the current negative headlines (war, energy crisis, inflation) will overshadow the revelations about the shortcomings of the VCM in the eyes of the public. On

the other hand, it was widely commented that the VCM approach and carbon neutrality claims derived from it should be optimised rather than setting up a new approach, such as the contribution claim model, in response to the VCM's weaknesses. However, some companies also wanted to see political intervention and support in relation to the claims.

The tourism sector typically comprises a large number of different products, all of which produce their own inherent CO<sub>2</sub> emissions. In order to avert the far-reaching consequences of the climate crisis, CO<sub>2</sub> emissions must be reduced as quickly as possible. Many companies have already developed climate change strategies and also participate in the VCM. Nevertheless, SMEs in particular do not have the resources to set up their own position or department for sustainability issues and CSR. Therefore, in the case of the companies interviewed for this paper, sustainability strategies and the carbon offsetting included in them were usually planned and carried out alongside day-to-day operations. The following courses of action have been identified as ways to bolster the tourism industry's ability to use the VCM with integrity:

Due to this lack of internal expertise and the complexity of the VCM, it would be expedient to develop **guidelines** for the tourism sector or the individual tourism product groups. Pioneering companies and policymakers could draw up these guidelines together with the involvement and support of civil society and the scientific community. The outcome of the process could serve as a handbook for a more harmonised approach to the use of the voluntary carbon market. In addition to strengthening integrity, this greater standardisation could also improve the ability to compare companies, counteracting the distortion of competition.

In addition to developing guidelines, the **support available to companies** could be expanded. Since most companies lack internal expertise in the field, they are exposed to a potential conflict of

interest on the part of offset providers. These providers not only sell carbon credits but also advise companies more widely on matters relating to climate strategy. The consultancy services from offset providers could be complemented by an offer of support from the state based on the jointly developed guidelines. Furthermore, this support could have a positive influence on capacity building within the companies themselves. Once a framework has been established in which they can share their experiences, actors within the tourism industry will be able to discuss strategies for dealing with shared challenges and develop ways for the industry to adapt its use of the VCM to comply with the requirements of the Paris Agreement.

One particular focus of the support provided could be to inform companies about the **contribution claim approach** and thereby encourage its acceptance. This model brings internal emission reductions to the fore so that the VCM can be used in a manner compatible with the Paris Agreement. While the approach has been attracting increasing attention recently, many aspects of it are still in the development stage. For example, the approach is included in the Claims Code of Practice published by the Voluntary Carbon Markets Integrity Initiative (VCMI, 2023, pp. 12, 35). Above and beyond this, however, government backing could make the approach more attractive to companies more quickly. So far, many companies see no advantage in the contribution claim model over conventional offsetting, partly because the concept of carbon neutrality comes up repeatedly in political goals. A progressive proposition regarding contribution claims as an alternative to conventional offsetting could change this situation.

In the light of the call for greater political intervention that emerged in the interviews, one possibility in the medium term is the **introduction of an obligation for companies** to take action to combat climate change beyond their own value

chains. This could make involvement in the VCM more widespread and bring the industry into greater alignment with the requirements set out by the Paris Agreement.

# Bibliography

- Balaš, M., & Strasdas, W. (2018). *Nachhaltigkeit im Tourismus: Entwicklungen, Ansätze und Begriffsklärung*. Umweltbundesamt.
- Balaš, M., Strasdas, W., Neumann, F., Mattes, A., Becker, L. S., Griese, J. C. P., Renner, A., Weber, A., Kohl, K., Pinnow, D., Zeiner, M., Rein, H., & Heck, S. (2021). *Messung der Nachhaltigkeit des Tourismus in Deutschland—Entwicklung eines Tourismus-Nachhaltigkeits-Satellitenkontos*. Umweltbundesamt.
- Baumeister, S. (2015). Environmental Responsibility as a Factor in Gaining Competitive Advantage in the Aviation Industry. *Journal of Geotechnical and Transportation Engineering*, 1(2).
- Black, R., Cullen, K., Fay, B., Hale, T., Lang, J., Mahmood, S., & Smith, S. (2021). *Taking Stock: A global assessment of net zero targets—Scrutinising countries, states and regions, cities and companies*. The Energy & Climate Intelligence Unit and Oxford Net Zero. [https://ca1-eci.edcdn.com/reports/ECIU-Oxford\\_Taking\\_Stock.pdf?v=1616461369](https://ca1-eci.edcdn.com/reports/ECIU-Oxford_Taking_Stock.pdf?v=1616461369)
- Boon, B. H., Schroten, A., & Kampman, B. (2007). *Compensation Schemes for Air Transport*.
- Brander, M., Broekhoff, D., & Hewlett, O. (2022). *The Future of the Voluntary Offset Market: The Need for Corresponding Adjustments* [Edinburgh Research Explorer]. <https://www.research.ed.ac.uk/en/publications/the-future-of-the-voluntary-offset-market-the-need-for-correspond>
- Bruhn, M. (2014). Wettbewerbsvorteile durch Nachhaltigkeit in Dienstleistungsangeboten. In H. Meffert, P. Kenning, & M. Kirchgeorg (Hrsg.), *Sustainable Marketing Management* (S. 313–337). Springer Fachmedien Wiesbaden. [https://doi.org/10.1007/978-3-658-02437-6\\_16](https://doi.org/10.1007/978-3-658-02437-6_16)
- Bruhns, M., Currele, M., & Stachel, A. (2017). RECARO goes green: Wettbewerbsvorteile durch Nachhaltigkeit. In T. Wunder (Hrsg.), *CSR und Strategisches Management* (S. 253–271). Springer Berlin Heidelberg. [https://doi.org/10.1007/978-3-662-49457-8\\_13](https://doi.org/10.1007/978-3-662-49457-8_13)
- Bundesamt für Naturschutz. (o. J.). *Ökotourismus*. Abgerufen 5. Mai 2023, von <https://www.bfn.de/oekotourismus>
- Bundesministerium für Wirtschaft und Energie. (2021). *Nationale Tourismusstrategie. Aktionsplan des Bundesministeriums für Wirtschaft und Energie*. [https://www.bmwk.de/Redaktion/DE/Downloads/M-O/nationale\\_tourismusstrategie.pdf?\\_\\_blob=publicationFile&v=6](https://www.bmwk.de/Redaktion/DE/Downloads/M-O/nationale_tourismusstrategie.pdf?__blob=publicationFile&v=6)
- Day, T., Mooldijk, S., Hans, F., Smit, S., Posada, E., Skribbe, R., Woollands, S., Fearnehough, H., Kuramochi, T., Warnecke, C., Kach, A., & Höhne, N. (2023). *Corporate Climate Responsibility Monitor 2023. Assessing the Transparency and Integrity of Companies' Emission Reduction and Net-Zero Targets*. New Climate Institut, Carbon market Watch.
- de Grandpré, J., Hofstetter, P., & Öttl, S. (2021). *Fit für Paris. Ein Leitfaden, wie sich unternehmerische Klimastrategien mit dem Pariser Abkommen vereinbaren lassen*. WWF.
- Destatis. (o. J.). *Tourismus in Deutschland im Jahr 2022: 45,3 % mehr Übernachtungen als im Vorjahr, aber 9,1 % weniger als vor Corona*. Statistisches Bundesamt. Abgerufen 14. April 2023, von [https://www.destatis.de/DE/Presse/Pressemitteilungen/2023/02/PD23\\_055\\_45412.html](https://www.destatis.de/DE/Presse/Pressemitteilungen/2023/02/PD23_055_45412.html)
- Destatis. (2021). *Aktuelle Daten zur Tourismuswirtschaft. Wirtschaftliche Bedeutung und*

*Nachhaltigkeit*. Statistisches Bundesamt.

Destatis. (2023). *Statistik über die touristische Nachfrage. Reisen: Deutschland, Jahre, Ausgewählte Zielländer/Zielkontinent/Reiseziel*. Statistisches Bundesamt. <https://www-genesis.destatis.de/genesis/online?operation=previous&levelindex=3&step=2&titel=Ergebnis&levelid=1681742879307&levelid=1681742817464#abreadcrumb>

Deutscher Reiseverband. (o. J.). *Klimaschutz*. DRV. Abgerufen 21. April 2023, von <https://www.driv.de/themen/nachhaltigkeit/klimaschutz.html>

Deutscher Tourismusverband. (2022). *Zahlen, Daten, Fakten. Das Tourismusjahr 2021 im Rückblick*.

[https://www.deutschertourismusverband.de/fileadmin/Mediendatenbank/Bilder/Presse/ZDF\\_2022.pdf](https://www.deutschertourismusverband.de/fileadmin/Mediendatenbank/Bilder/Presse/ZDF_2022.pdf)

DHU. (2023, April 5). *Verbrauchertäuschung mit vermeintlicher „Klimaneutralität“: Deutsche Umwelthilfe gewinnt vor Gericht gegen TotalEnergies wegen angeblich „CO<sub>2</sub>-kompensiertem Heizöl“*. Deutsche Umwelthilfe e.V.

<https://www.duh.de/presse/pressemitteilungen/pressemitteilung/verbrauchertaeschung-mit-vermeintlicher-klimaneutralitaet-deutsche-umwelthilfe-gewinnt-vor-gericht/>

Doda, B., La Hoz Theuer, S., Cames, M., Healy, S., & Schneider, L. (2021). *Voluntary offsetting: Credits and allowances* (04/2021; Climate Change). Umweltbundesamt.

[https://www.umweltbundesamt.de/sites/default/files/medien/5750/publikationen/2021\\_01\\_11\\_cc\\_04-2020\\_voluntary\\_offsetting\\_credits\\_and\\_allowances\\_1.pdf](https://www.umweltbundesamt.de/sites/default/files/medien/5750/publikationen/2021_01_11_cc_04-2020_voluntary_offsetting_credits_and_allowances_1.pdf)

Donofrio, S., Maguire, P., Myers, K., Daley, C., & Lin, K. (2021). *Markets in Motion: State of the Voluntary Carbon Markets 2021—Installment 1*.

Eijgelaar, E. (2011). Voluntary Carbon Offsets a Solution for Reducing Tourism Emissions? Assessment of Communication Aspects and Mitigation Potential. *European Journal of Transport and Infrastructure Research*, Vol 11 No 3 (2011).

<https://doi.org/10.18757/EJTIR.2011.11.3.2933>

Engler, D., Gutsche, G., Simixhiu, A., & Ziegler, A. (2023). On the relationship between corporate CO<sub>2</sub> offsetting and pro-environmental activities in small- and medium-sized firms in Germany. *Energy Economics*, 118, 106487. <https://doi.org/10.1016/j.eneco.2022.106487>

Fischer, T., & Knuth, H. (2023, Mai 1). CO<sub>2</sub>-Zertifikate: Der große Klimabetrug. *Die Zeit*. <https://www.zeit.de/2023/04/co2-zertifikate-betrug-emissionshandel-klimaschutz>

Greenfield, P. (2023, Januar 18). *Revealed: More than 90% of rainforest carbon offsets by biggest certifier are worthless, analysis shows*.

<https://www.theguardian.com/environment/2023/jan/18/revealed-forest-carbon-offsets-biggest-provider-worthless-verra-aoe>

Greenpeace. (2022, Juni 2). *Greenwashing: 5 Tricks der Luftfahrtindustrie, um nachhaltig zu erscheinen | Greenpeace*. <https://greenpeace.at/news/blog-greenwashing-fluglinien/>

Hamrick, K., Goldstein, A., Peters-Stanley, M., & Gonzalez, G. (2015). *Ahead of the Curve. State of the Voluntary Carbon Markets 2015*. Forest Trends' Ecosystem Marketplace.

<https://www.forest-trends.org/wp-content/uploads/2015/06/State-of-the-Voluntary-Carbon-Markets-2015.pdf>

Harvey, F. (2023, Januar 18). Greenwashing or a net zero necessity? Climate scientists on carbon offsetting. *The Guardian*.

<https://www.theguardian.com/environment/2023/jan/18/greenwashing-or-net-zero-necessity-climate-scientists-on-carbon-offsetting-aoe>

ICVCM. (2023). *Core Carbon Principles, Assessment Framework and Assessment Procedure*.

- The Integrity Council for the Voluntary Carbon Market. <https://icvcm.org/wp-content/uploads/2023/03/CCP-Book-FINAL-27Mar23.pdf>
- Kreibich, N., & Hermwille, L. (2021). Caught in between: Credibility and feasibility of the voluntary carbon market post-2020. *Climate Policy*, 21(7), 939–957. <https://doi.org/10.1080/14693062.2021.1948384>
- Kreibich, N., & Obergassel, W. (2019). *The Voluntary Carbon Market: What may be Its Future Role and Potential Contributions to Ambition Raising?* [UBA Discussion Paper]. German Emissions Trading Authority (DEHSt). [https://epub.wupperinst.org/frontdoor/deliver/index/docId/7396/file/7396\\_Carbon\\_Markt.pdf](https://epub.wupperinst.org/frontdoor/deliver/index/docId/7396/file/7396_Carbon_Markt.pdf)
- Machnik, D., Schambil, K., & Tänzler, D. (2023). *Infopapier zur Marktanalyse—Freiwillige Kompensation 2021* (Climate Change). Umweltbundesamt.
- Machnik, D., Tänzler, D., Schambil, K., Warnecke, C., Kachi, A., Götz, M., & Meierhofer, F. (2022). *Abschlussbericht: Wie kompensiert Deutschland?* (Climate Change) [52/2022]. Umweltbundesamt. [https://www.umweltbundesamt.de/sites/default/files/medien/479/publikationen/cc\\_52-2022\\_wie\\_kompensiert\\_deutschland.pdf](https://www.umweltbundesamt.de/sites/default/files/medien/479/publikationen/cc_52-2022_wie_kompensiert_deutschland.pdf)
- MacKerron, G. J., Egerton, C., Gaskell, C., Parpia, A., & Mourato, S. (2009). Willingness to pay for carbon offset certification and co-benefits among (high-)flying young adults in the UK. *Energy Policy*, 37(4), 1372–1381. <https://doi.org/10.1016/j.enpol.2008.11.023>
- Michaelowa, A., Shishlov, I., & Brescia, D. (2019). Evolution of international carbon markets: Lessons for the Paris Agreement. *Wiley Interdisciplinary Reviews: Climate Change*, 10(6). <https://doi.org/10.1002/wcc.613>
- Ministry of Ecological Transition. (2023). *Compensation of greenhouse gas emissions related to domestic flights*. Ministry of Ecological Transition. <https://www.ecologie.gouv.fr/en/compensation-greenhouse-gas-emissions-related-domestic-flights>
- Trouwloon, D., Streck, C., Chagas, T., & Martinus, G. (2023). Understanding the Use of Carbon Credits by Companies: A Review of the Defining Elements of Corporate Climate Claims. *Global Challenges*, 7(4), 2200158. <https://doi.org/10.1002/gch2.202200158>
- TUI Group. (o. J.). *Kreuzfahrten*. Abgerufen 21. Juni 2023, von <http://www.tuigroup.com/de/verantwortung/politik/kreuzfahrten>
- UBA. (2018). *Freiwillige CO2-Kompensation durch Klimaschutzprojekte*. Umweltbundesamt. (2022, April 26). *Anpassung an den Klimawandel im Tourismus* [Text]. Umweltbundesamt; Umweltbundesamt. <https://www.umweltbundesamt.de/themen/klima-energie/klimafolgen-anpassung/anpassung-an-den-klimawandel/anpassung-auf-kommunaler-ebene/anpassung-an-den-klimawandel-im-tourismus>
- Umweltbundesamt. (2023, Mai 2). *Treibhausgas-minderungsziele Deutschlands* [Text]. Umweltbundesamt; Umweltbundesamt. <https://www.umweltbundesamt.de/daten/klima/treibhausgas-minderungsziele-deutschlands>
- UNFCCC. (2021, Februar 26). *A Beginner's Guide to Climate Neutrality*. <https://unfccc.int/blog/a-beginner-s-guide-to-climate-neutrality>
- United Nations, & World Tourism Organization (Hrsg.). (2010). *International recommendations for tourism statistics 2008*. United Nations.
- UNWTO. (o. J.-a). *Glossary of tourism terms | UNWTO*. Abgerufen 13. April 2023, von

<https://www.unwto.org/glossary-tourism-terms>

UNWTO. (o. J.-b). *The Glasgow Declaration on Climate Action in Tourism*. Abgerufen 21. April 2023, von <https://www.unwto.org/the-glasgow-declaration-on-climate-action-in-tourism>

VCMI. (2023). *Claims Code of Practice. Building integrity in voluntary carbon markets*.

<https://vcmintegrity.org/vcmi-claims-code-of-practice/>

White, N., Philip, S., & Noueihed, L. (2022, Oktober 11). *Studie: Airlines täuschen Fluggäste bei CO2-Neutralität*. capital.de. <https://www.capital.de/wirtschaft-politik/ryanair--lufthansa-und-co---airlines-taeuschen-fluggaeste-bei-co2-neutralitaet-32801624.html>

Zeppel, H., & Beaumont, N. (2013). Assessing motivations for carbon offsetting by environmentally certified tourism enterprises. *Anatolia*, 24(3), 297–318.

<https://doi.org/10.1080/13032917.2012.759982>

**Wuppertal Institute**

for Climate, Environment and Energy

P.O. Box 100480

42004 Wuppertal

GERMANY

[www.wupperinst.org](http://www.wupperinst.org)

