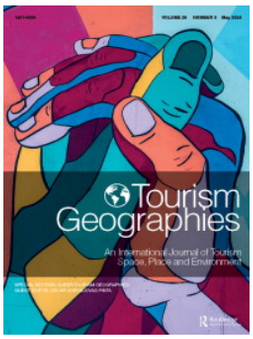

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RESEARCH ARTICLE

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National tourism organizations and climate change

Stefan Gössling[a,b], Ralf Vogler[c], Andreas Humpe[d,e,f] and Ning (Chris) Chen[g]

[a]Western Norway Research Institute, Sogndal, Norway; [b]School of Business and Economics, Linnaeus University, Kalmar, Sweden; [c]Institute of Tourism, Travel & Hospitality (ITTH), Heilbronn University of Applied Sciences, Heilbronn, Germany; [d]Munich University of Applied Sciences, München, Germany; [e]Center for Applied Research for Responsible Innovation (CARRI), Munich, Germany; [f]Institute for Applications of Machine Learning and Intelligent Systems (IAMLIS), Munich, Germany; [g]Department of Management, Marketing and Entrepreneurship, University of Canterbury, Christchurch, New Zealand

ABSTRACT

There is a consensus that the global tourism system needs to undergo decarbonization and achieve net-zero emissions by mid-century. However, given the anticipated growth in the most energy-intensive subsector of tourism, air transport, achieving this goal seems unlikely. This paper focuses on the role of distance in the global geography of tourism, against evidence that National Marketing Organizations (NTOs) often seek to attract visitors from all over the world. The analysis of data for a sample of 12 NTOs in Europe, the USA and Canada reveals that the number of markets targeted varies between six and 33, with significant differences in the average distance to markets (<4,000 to 8,000 km), as well as emissions per arrival by market (0.2 t CO_2 to 2.5 t CO_2). For the countries studied, the 17% of the most distant arrivals cause 62% of the emissions. Results also show that more distant markets are more sensitive to disruptions such as COVID-19. These findings have relevance for destination marketing that point to new climate change related roles for NTOs such as rebranding, demarketing, market segmentation, and communication.

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1. Introduction

Global tourism is responsible for an estimated 8% of emissions of CO_2 and further growth is anticipated (Lenzen et al., 2018). As steep emission cuts are necessary over the next 30 years to stabilize the climate, continued growth contradicts decarbonization goals. To limit warming to 1.5 °C compared to pre-industrial times, global greenhouse gas emissions need to peak in the immediate future, and half by, 2030 (Shukla et al., 2022). To meet any such a goal will require fundamental changes in the wider

CONTACT Stefan Gössling sgo@vestforsk.no.

economy and is an even greater challenge for tourism and its significant year-on-year growth in energy consumption (Gössling et al., 2024; Lenzen et al., 2018; Sun, 2016).

Within the tourism system, transport has been recognized as the most important emissions sub-sector (Lenzen et al., 2018). Depending on assessment method, transport - including road, rail, air, and water - is responsible for about half of the sector's overall contribution to climate change. Within transport, aviation is the most relevant transport mode due to its energy intensity (ibid.). Air transport causes additional warming at flight altitude (Lee et al., 2021) that increases the importance of the sector for climate change. Air travel is also expected to grow rapidly, while its options to become climatically sustainable are fraught with challenges regarding technology innovation, alternative fuels, production scalability and distribution, or cost (Bergero et al., 2023; Gössling & Humpe, 2024).

For this reason, it has been concluded that rapid decarbonization of tourism will depend on more fundamental changes in the global tourism system than incremental year-on-year efficiency gains (Peeters & Dubois, 2010). One of the most effective strategies to achieve this is to bring down average per trip emissions (Gössling and Peeters, 2015). Per trip perspectives also represent the normative underpinning of this paper: Destinations can achieve significant emission cuts through shifts in transport modes away from aviation and corresponding reductions in average travel distance (Dubois & Ceron, 2009). Changes in the composition in leisure tourism markets have been discussed as important strategies for National Tourism Organizations to contribute to emission reductions (Sun et al., 2020). These can be supported through changes in marketing campaigns, potentially even including demarketing efforts (Hall, 2009; Hall et al., 2020) and will ultimately lead to a new global tourism geography (Peeters & Landré, 2011).

Such insights are no longer theoretical. For example, the European Aviation Environmental Report (EASA, 2023) concludes that the 5.5% of the longest flights (>4.000 km) are responsible for 46.1% of CO_2 emissions; the most relevant are North Atlantic flights (2.1% of flights, 15.4% of emissions) and Asia/Pacific flights (1.2% of flights, 13.7% of emissions). Schiphol Airport near Amsterdam in the Netherlands is an example of a tourism stakeholder seeking to reduce its environmental impact and to specifically target the 20% of the longest flights that account for 80% of emissions (Emmerink et al., 2024).

Against this background, the main purpose of this paper is to analyse the role of NTOs in climate change mitigation efforts, specifically in regard to the implications of their marketing efforts. Which markets do NTOs seek to attract, over which distances? Are long-haul markets important in the mix of nationalities attracted to a destination, increasing the share of long-haul air travel? Can NTOs contribute to emission reductions through adjustments in their marketing mix? These research questions are investigated within the field of NTO marketing. The methodology employed is of an exploratory nature, necessitating further, more nuanced research to validate the interconnections observed and to establish comprehensive databases needed for more definitive conclusions. Nevertheless, the initial results underscore the significance of this approach in the context of governance, as well as the potential emerging roles and responsibilities of National Tourism Organizations in the context of climate change.

2. The importance of distance for climate change

2.1. System change needs

The challenge of decarbonizing tourism, specifically under continued growth scenarios, has been discussed in a wide range of papers (Gössling et al., 2024; Lenzen et al., 2018; Peeters & Dubois, 2010; Scott et al., 2016; Sun et al., 2022; Sun and Higham, 2020). Several of these have investigated barriers to rapid emission reductions. For example, Peeters and Dubois (2010) conducted a series of scenario runs ($n = 70$) to identify the system changes that would contribute to emission reductions aligned with global targets (-70% between 2005 and 2035), based on energy efficiency gains and changes in tourist flows, modal shifts, destination shifts and length of stay. They found that none of their scenarios was capable of achieving such reductions, concluding that 'without radical shifts, it seems impossible to find a future […] consistent with the strong CO_2 emission reductions required' (Peeters & Dubois, 2010: 455). The authors also underlined that 'improvements in technology alone are insufficient' and that 'major shifts in transport modes and destination choice [will be] necessary' (Peeters & Dubois, 2010: 455-456).

These general findings have more recently been echoed in publications analysing tourism emissions, concluding that tourism is a growth sector contradicting national efforts to decarbonize (Gössling et al., 2024). It seems clear that fundamental changes in the global geography of tourism are needed to advance net-zero goals (Peeters & Landré, 2011), with a priority to reduce the most energy-intense trips. The relevance of per-trip perspectives (rather than a systemic view) can be illustrated in comparison: current emissions per person per year are 4.3 t CO_2 on global average (in, 2020; World Bank, 2023a). A single long-haul flight can cause emissions that exceed this value; for instance, a flight from Frankfurt, Germany to Phuket, Thailand causes global warming equivalent to more than 6 t CO_2 (see flight calculator www.atmosfair.de), showing how relevant air transport is in increasing emissions (Gössling & Humpe, 2024). By implication, reducing the average travel distance to markets is a robust strategy for reducing emissions (Sun et al., 2020).

In fact, the role of market composition in the generation of transport emissions has been discussed for some time. For example, the restructuring of markets by adjusting marketing efforts, with a view on retaining revenue, was assessed for France, Seychelles, the city of Amsterdam (The Netherlands), and Rocky Mountains National Park (Gössling et al., 2005). Findings revealed that distance affected the ratio of emissions per unit of revenue unfavourably, and the authors concluded that 'the comparably small share of tourism with a particularly unfavourable eco-efficiency [long-haul travel] seems to substantially increase tourism's world average eco-efficiency' (Gössling et al., 2005: 432). To bring down emissions, the authors recommended - for the example of Amsterdam - to increase (close small markets, e.g. Germany, Belgium, France), decrease (large distant markets, e.g. USA), maintain (large European markets, e.g. UK), or seize marketing efforts (small distant markets, e.g. Japan, Australia).

Another study (Gössling et al., 2015) analysing air-based arrivals in eleven destinations revealed that per-arrival emission intensities varied by a factor 30 over the range of destinations, and up to a factor 5 for average emission intensities between

destinations. Average per arrival CO_2 emissions (only considering air transport fuel use, corresponding to scope 1 emissions) varied from 370 kg CO_2 per tourist in Spain to 3,930 kg CO_2 per tourist in New Zealand; a result of differences in average travel distance in the market-mix of the respective destinations. The authors concluded that 'Where policies favour the development of long-haul markets, energy- and emission intensities will grow, and decarbonization become more difficult' (ibid.: 208).

Research for this reason focused on optimizing the demand mix for destinations. Sun et al. (2020) developed four scenarios to test the implications of changes in the visitor mix, considering per day spending, per trip spending, length of stay, seasonality, per trip CO_2 and use of public transport for international visitors to Taiwan. They concluded that it would be possible to change the marketing mix while balancing economic, seasonal, and emission concerns. For example, one scenario allowed for a 5.3% reduction in emissions at the cost of a small reduction (-0.9%) in visitor consumption. As many destinations plan to grow their tourism systems, a recent line of research has investigated the economic importance of tourism and its carbon intensity in comparison to other economic sectors. These studies have confirmed that growth and net-zero carbon ambitions are very difficult to align. See, for example, Sun et al. (2022) for Norway, and Sun and Higham (2020) for New Zealand.

As emissions from global tourism continue to grow (Lenzen et al., 2018), the literature highlights a central role for destinations to support decarbonization through changes in the marketing mix. Yet, research has concluded that NTOs favour 'source markets with high arrivals growth potential', rather than 'employ[ing] optimization and de-growth strategies […] to induce a gradual and moderate change in the visitor mix in order to minimize risks and maximize benefits' (Sun et al., 2020: 10). There is thus a potential win-win situation in the consideration of arrival distance, in that emissions can be reduced and greater stability in more beneficial markets can be achieved.

2.2. NTO marketing

Marketing is a means of bridging demand and supply - often with the intention to drive demand - and based on principles of consumer segmentation (Kotler et al., 2015). Its principles and techniques have been widely applied in tourism contexts and tested in international markets (Pike & Page, 2014), including narratives, slogans, images, brands, and stories, as well as, more recently, celebrities and travel influencers. Efforts may focus on specific markets or market segments, and there is often a preferred period of visitation during which tourists are to be attracted (Pike & Page, 2014). This is particularly relevant at the national level, as international travellers consider the homogeneity of countries even when visiting different places within a country—this includes, for example, currency, language, governance structure, or culture (Correia & Pimpão, 2008).

NTOs are public institutions (Hall, 1994), funded by governments to develop and maintain national destination brands (Hay, 2021). Depending on situation, this also includes changes to the national brand. As an example, the Macao Government Tourist Office (MGTO) has made a considerable effort to turn Macao from its 'gamble city'

image into a diversified international destination integrating food culture, sightseeing, entertainment, shopping, business travel, and festivals (Qi & Chen, 2019). Tourism Ireland advises its tourism stakeholders of the importance of Australia and New Zealand as markets, as well as emerging markets such as China and India, announcing that the NTO is committed to grow the tourism system over the coming years (Tourism Ireland, 2023a). To achieve this, NTOs often establish tourism representations in important markets: Tourism Ireland, for example, maintains an office in Mumbai (Tourism Ireland, 2023b).

Notably, such efforts to grow markets and the overall tourism system in 'boosterism' approaches (Cooper & Hall, 2007), as well as the focus on emerging economies as new profitable markets, have often co-evolved with the campaigns run by large tourism enterprises in the private sector. Global hotel chains constantly add capacity (Gössling et al., 2024), airlines seek to expand the network of destinations on offer, often at budget prices (Higham et al., 2022). These developments have had important side-roles in the expansion of long-haul travel trends that need to be acknowledged.

Hay (2020, 2021) suggests that NTOs have had a long-standing role in defining marketing strategies, but now represent outdated institutions. 'Old' rationales for NTOs - such as the small-scale character of tourism business and difficulty of reaching out to dispersed markets—are becoming increasingly redundant, as the individuality of demand can no longer 'be satisfied through generic destination marketing campaigns' (Hay, 2021: 180). DMOs, Hay (2021) argues, have taken over important marketing roles, as tourists i) are more likely to travel to cities, ii) their overall number is increasing, and iii) they use their own channels of information and reservation, such as phones.

Yet, the evidence is that many NTOs continue to have large budgets, seeking to attract travellers from international markets (Araújo, 2022). While there is no data to suggest how much money is spent globally on destination marketing—or its success in attracting visitors -, it is evident that larger destinations spend significant amounts. For example, recent annual marketing budgets have been €18.8 million in the USA (US Travel Association Destinations Council, 2020), €102 million in Australia (Tourism Australia, 2022), and €75 million in Ireland (Tourism Ireland, 2023a). There are also many destinations that have announced plans to grow their tourism systems. The open-ended goal of Saudi Arabia, for example, is 100 million arrivals per year, up from 20.3 million in 2019 (Saudi Arabia Ministry of Tourism, 2023; World Bank, 2023b). Evidence of National Tourism Organizations seeking to reduce their visitor numbers—or to stabilize arrivals—has remained limited, even in the overtourism period in 2018 and 2019 that saw a peak in critical debates on tourism growth (Séraphin et al., 2019).

With a view to the Glasgow Declaration on Climate Action in Tourism (UNWTO., 2023a), continued tourism growth is seen more critically, and the implications of distance must be considered. Awareness of and work with climate change is perhaps most evident at the level of DMOs: cities such as Edinburgh or Amsterdam have reduced marketing efforts (Hay, 2021), while programs such as the Austrian Climate and Energy Regions have made major inroads in raising awareness at the local level, creating momentum for low-carbon futures, and agreement on close market emphasis (Austrian Climate and Energy Strategy, 2018). This suggests that NTOs have the greatest influence on marketing, yet most efforts to reduce emissions through reconsideration of the market mix are apparent at the level of DMOs.

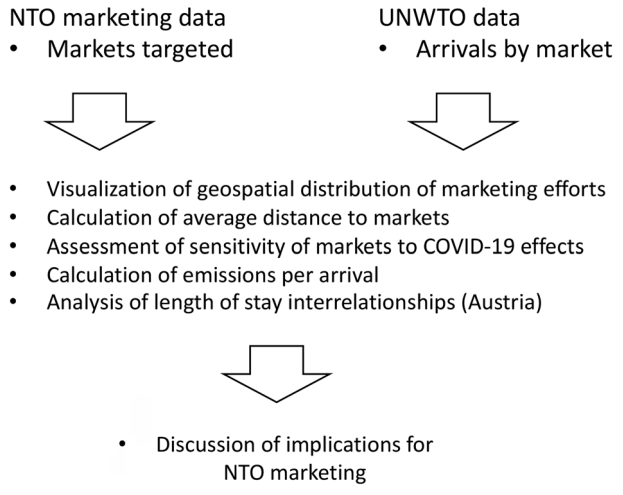

Figure 1. Overview of methodology.

3. Methodology

Given the need to reduce emissions immediately and in significant ways, this paper analyses the marketing efforts of a sample of twelve NTOs. An overview of the methodology is provided in Figure 1. Focus is on Europe, i.e. a region that is seeking to limit climate change based on legislation that mandates a reduction in emissions (EC (European Commission), 2023b). The desk research, completed in November 2023, involves a convenience sample of NTOs that was determined by data availability and accessibility (i.e. the markets targeted by an NTO). The sample was determined after a screening of all NTO websites in the EU27 plus Norway, Switzerland and UK, the USA and Canada, to identify and include all NTOs that account for their marketing efforts by individual target country. This led to the inclusion of Austria, Germany, Ireland, Italy, Norway, Spain, Sweden, Switzerland, UK and France, all of which provide this information online in English or national languages spoken by the authors. For the purpose of this study, a marketing effort was defined as any marketing activity carried out in a foreign country through the NTO. For consistency reasons, this does not differentiate between wholly owned offices and marketing representations (Destination Canada, 2024), or campaign purchases through agencies on a business-to-business basis (Visit Norway, 2023). Representation outlets that are part of embassies or other government related institutions (Visit Britain, 2023) are also counted as marketing efforts. It is acknowledged that the georeferencing of promotional effort is a proxy indicator for the spatial reach of strategic marketing, and not indicative of marketing cost or success, such as the tourist flow and revenue generated through these initiatives.

Even though the research is limited by its convenience sampling approach, it includes some of the European Union's most important tourism economies: Germany (€124 billion, total tourism direct gross value added to economy), Italy (€100 billion), and France (€87 billion) alone account for 54.4% of the €572 billion of EU27 gross value added by tourism (EC (European Commission), 2023a). The USA with a tourism

value of €1.7 trillion in 2019 (ITA (International Trade Administration), 2024) and Canada with €67 billion in 2018 (Destination Canada, 2024) were added as important destinations and markets. Both countries have no other near markets, which makes them interesting for comparison; marketing data was derived online from the respective NTO websites. As the definition of a 'near' market is necessarily a matter of perspective, it is here used in relative terms of distance. As an example, Mexico is a close market to the USA, and Germany to Austria, but the average distance travelled by a tourist may vary by thousands of kilometres.

Additional data for the 12 countries (arrivals, visitors by market, importance of tourism for GDP generation) has been sourced from UNWTO (2023b,c) and covers the period 2019-2022. The study consequently includes data for the last pre-COVID-19 year (2019), for which marketing efforts are analysed. It also covers three pandemic years (2020-2022) to allow for an assessment of the disruptive impact of the pandemic. These latter years have to be interpreted with caution, as leisure tourism was, in general terms, more affected than business travel and the 'visiting friends and relatives' segment. Furthermore, countries have handled the pandemic differently (e.g. lockdowns, flight restrictions; Gössling & Schweiggart, 2022), which may affect findings. While it would have been of interest to also consider other countries, such as important destinations in the Caribbean or Asia, or to study the market efforts of countries in Oceania (Australia, New Zealand), data availability does not currently allow for such comparisons. The exploratory character of this paper should thus be seen as a starting point for the discussion of geospatial aspects of marketing efforts.

To visualize the geospatial distribution of marketing efforts, data for each market has been transferred into world maps. Based on this information, average market distance is calculated, a measure that is derived by summing up the great circle distances from the capitals of each market to the capital in the destination country, divided by the number of markets. As the location of capital cities are not necessarily the main loci of tourism activity, this data serves as an indication of differences. The approach also allows for reflections on market importance where data is available, i.e. the number of international tourists derived from these markets in relation to their length-of-stay, spending, or the importance of specific markets and their visitation periods for year-around tourism models.

Further analysis is carried out to determine how sensitive markets are to disruptions by comparing arrivals in 2019 with the COVID-19 years. This is becoming increasingly important not only because of the prospect of future pandemics (Hall et al., 2020), but also to consider disruptive events such as weather extremes—more likely under scenarios of climate change -, as well as the cost increase for travel, for instance related to climate policies in the EU (EC (European Commission), 2023b). To assess the sensitivity of markets, COVID-19 can serve as a proxy, for which we compare changes in visitation between 2019 and 2021 based on UNWTO (2023b) international arrival data. As the markets analysed for the 12 NTOs indicate three different distance ranges for arrivals (up to 3000 km, 3000-10,000 km, greater than 10,000 km), averages are calculated for the entire sample and plotted against distance. R-statistics has been used for all analyses.

To compare the climate impacts related to an arrival from each of the distance classes, emissions per arrival are also calculated. Air transport is used as a proxy, for

which average distances from the markets are calculated for each market and multiplied by an average emission factor for global aviation (0.09 kg CO_2 per km; Gössling & Humpe, 2024). This is likely to overestimate emissions from closer markets, as visitors are more likely to also use other transport modes, and more likely to underestimate long-haul arrival emissions, as longer flights are more likely to involve premium class air travel associated with greater emissions (World Bank, 2013). It is acknowledged that the assumption of an average emission factor is a simplification, as flight distance affects specific fuel use (Turgut et al., 2019).

Last, for most destinations, spending is the most important parameter when assessing the importance of markets. Spending varies between tourist nationalities (Oklevik et al., 2019) and is associated with length of stay (Fieger et al., 2021). Even though tourists spend more in the earlier phases of their stay, overall spending is a function of length of stay. Longer stays also positively contributing to profitability, as more money is spent on the more profitable tourism subsectors accommodation and food, rather than the less profitable transport sector (Oklevik et al., 2019). Average length of stay is analysed specifically for one country, Austria, which provides comprehensive arrival data (Oklevik et al., 2019; see also Statistik Österreich, 2023).

The analysis in this paper is characterized by various limitations. The focus is Europe, where the relevance of long-haul travel is generally different from small islands and developing states (SIDS) or remote destinations such as New Zealand and Australia. Further analyses are thus warranted specifically for these countries. The focus is also on marketing effort, and thus simplifying travel motivation (Pearce & Lee, 2005).

4. Marketing patterns and their implications

The analysis shows that there are considerable differences between NTOs, which may target in between 6 (Sweden) and 33 (Spain) international markets (see maps in Figure 2, as well as the blow-up for Spain to provide a more detailed understanding of the targeted markets, Figure 3). Many of the targeted markets have relevance for all of the twelve destinations studied. For instance, the USA and China are a focus of marketing efforts by 10 NTOs (including all European NTOs), while Canada is the focus of 7 NTOs, followed by India and Japan (7 NTOs), Australia and Brazil (5 NTOs). Maps show that Russia was an important market until recently, with marketing efforts in this country by six out of ten European NTOs. Switzerland's focus on Indonesia, or Italy's focus on Argentina also suggest that emerging economies are of growing interest for marketing portfolios. This seems to suggest that interrelationships of emissions and market distance are not understood or trumped by strategical considerations, as all emerging economy markets are long-haul markets.

In this general situation, Sweden sticks out for promotional efforts limited to two long-haul markets (USA and China) and four European markets. The USA and Canada are touristically interdependent, though marketing efforts are one-sided (the USA in Canada). Canada itself is focused on Mexico, various European countries (UK, France, and Germany), China, Japan and Australia. These latter markets are also targeted by the USA, along with Brazil and India, and a diverse European portfolio. A general conclusion from this analysis is that destinations consider it

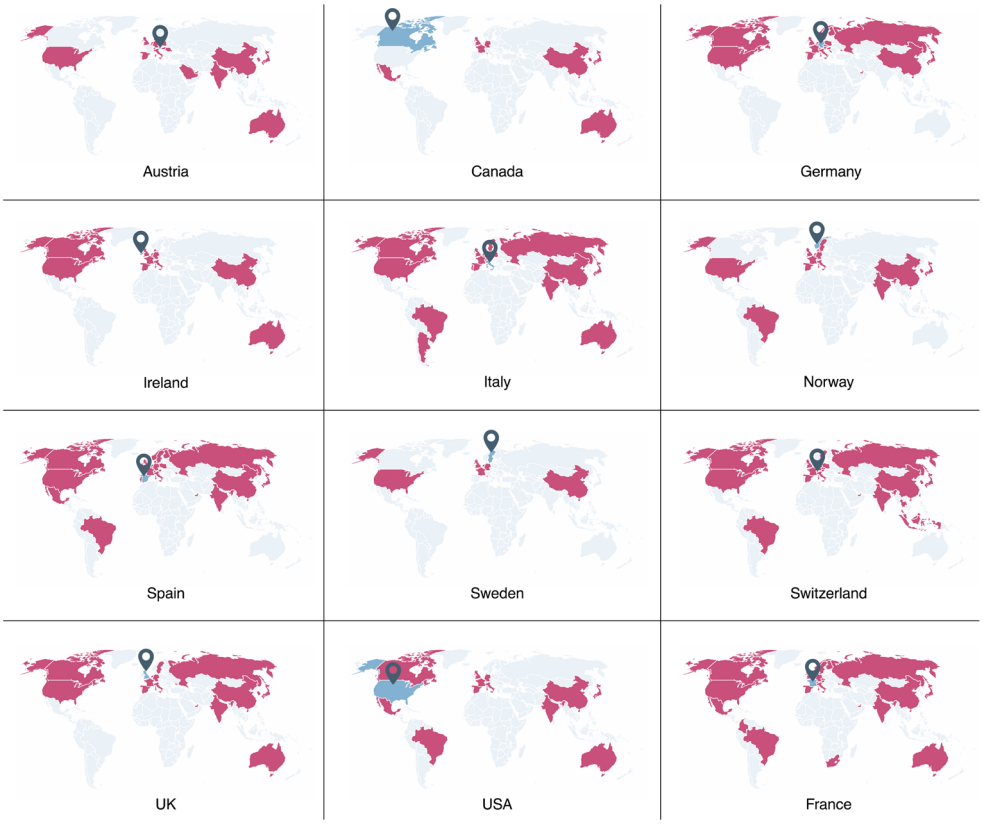

Figure 2. Illustration of marketing efforts by 12 NTOs*.
*Marketing effort refers to marketing activity in the highlighted countries through owned offices and marketing representations, campaign purchases through agencies on a business-to-business basis, or representation outlets that are part of embassies or other government related institutions.

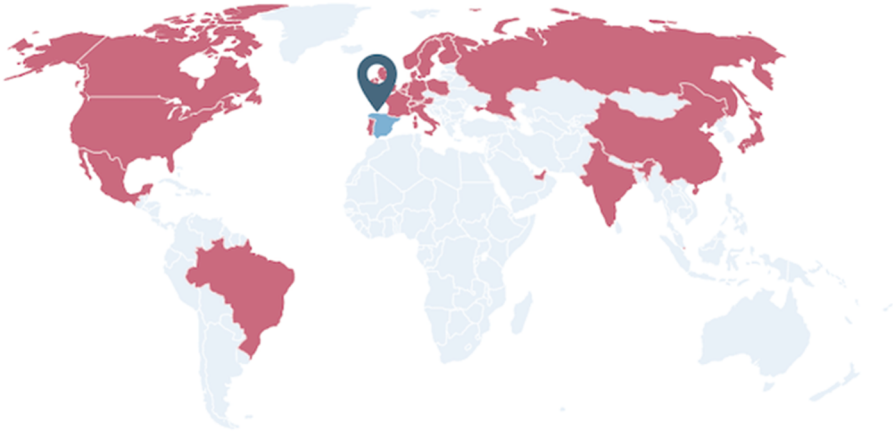

Figure 3. Detailed view of Spain's marketing efforts.

meaningful to engage in marketing efforts in any country with affluent populations. This includes emerging markets such as Brazil, Argentina, India or Indonesia.

Further insights can be gained from the analysis of market distance averages (Figure 4). For many countries, peripheral location will imply that average travel distances are necessarily longer, as can be illustrated by the comparison of Germany with New Zealand. Germany shares a border with Denmark, Poland, Czechia, Austria, Switzerland, France, Luxembourg, Belgium, and The Netherlands; New Zealand's closest significant market is Australia, involving at least a four-hour flight. This, however, does only partially explain differences in marketing efforts, as is evident from distributions shown in Figure 4. Within Europe, Austria, Germany, and Sweden all stay within a maximum market distance range of about 8,000 km, and an average (mean) distance of below 4,000 km. In comparison, France, Italy, or the UK have an upper range of marketing efforts of around 16,000-17,000 km, and an average distance of about 5,000 km. Both Canada and the USA have considerably higher average market distances around 8,000 km, illustrating the implications of near-market absence.

Tourist flows can also be evaluated in relation to relative measures of distance. Figure 5 illustrates this for the number of visitors by market, supporting a distance-decay function for arrivals that would confirm that distance discourages travel (Lee et al., 2012; McKercher et al., 2008). The relationship is weak, (R^2=0.068), but statistically significant (p= <0.01), and requires further empirical analysis, also because of inherent complexities. For example, willingness to engage in long-haul trips may be different in countries with a high share of visiting friends and relatives (VFR) travel or business travel. It also needs to be noted that it is leisure tourists who are predominantly targeted in marketing campaigns. It is also acknowledged that distance-decay does not necessarily reflect on marketing effectiveness, for instance in terms of arrivals per unit of money spent on marketing. Likewise, data does not reveal how important an arrival from a given market is in terms of per-tourist spending. However, data can be analysed in terms of the importance of visitor flows from managed (with marketing efforts) and unmanaged (no marketing effort) markets. The comparison shows that the share of arrivals from managed markets ranges from 18.9% (Canada) to 90.9% (Spain) (in 2019; Table 1), in a reflection on the different marketing strategies pursued by NTOs.

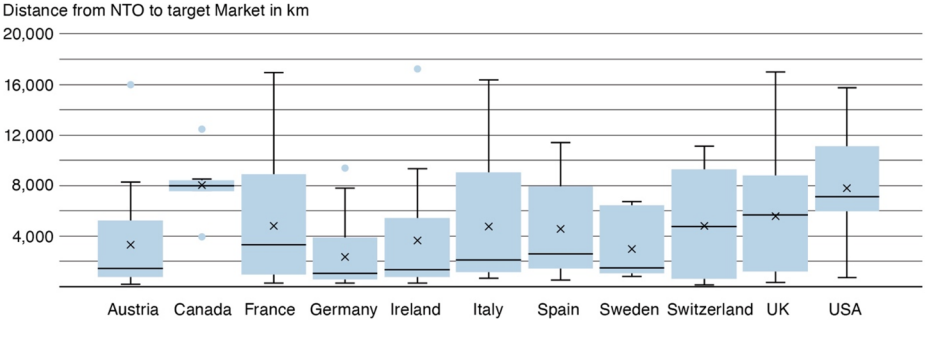

Figure 4. Mean and min-max range of distance to markets*.
*no data for Norway

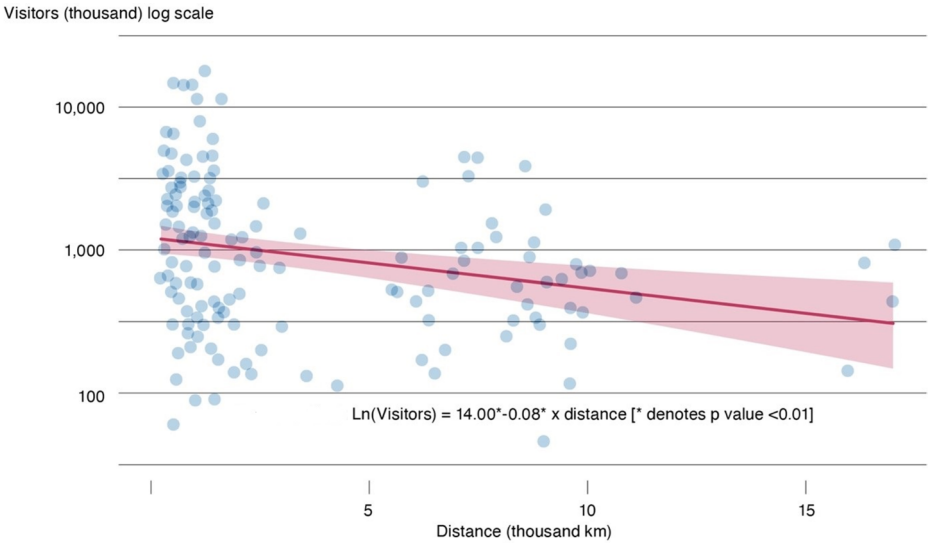

Figure 5. Arrivals and distance functions*.
*based on data for eight countries (Austria, France, Germany, Italy, Spain, Sweden, Switzerland, UK)

Table 1. Share of arrivals from 'managed' markets, 2019 and 2021.

Destination	Share of arrivals 2019 (%)	Share of arrivals 2021 (%)	Increase (+) decrease (-) (%)	Tourism share of GDP 2019 (%)	Tourism share of GDP 2021 (%)
Austria	87.7	92.1	+ 4.4	5.6	3.0
Canada	18.9	14.9	− 4.0	2.1	1.0
Germany	85.1	83.5	− 1.6	4.0	–
Ireland*	–	–	–	4.8	
Italy	85.4	76.9	− 8.5	5.7	–
Norway*	–	–	–	3.6	–
Spain	90.9	89.8	− 2.1	6.8	–
Sweden	38.1	43.2	+ 5.1	2.4	1.9
Switzerland	77.2	81.4	+ 4.2	2.9	–
UK	57.7	51.0	− 6.7	3.6	
USA	77.1	68.8	− 8.3	–	
France	76.0	86.0	+ 10.0	4.0	

*no data available.
Source: calculation based on data from UNWTO (2023b,c).

Table 1 contains data on the share of arrivals from managed markets in 2021, allowing for comparison with 2019 in a reflection on the disruptiveness of the COVID-19 pandemic and its effect on tourism. It would be expected that the share of arrivals from managed markets would increase in 2021, as marketing efforts support a stronger rebound from these markets (see Scott et al., 2008). However, data does not indicate a clear pattern, as the share of arrivals from managed markets has increased in four destinations and declined in six. Any change in arrivals is specifically relevant for destinations dependent on tourism for GDP contributions, which have for instance halved in Canada.

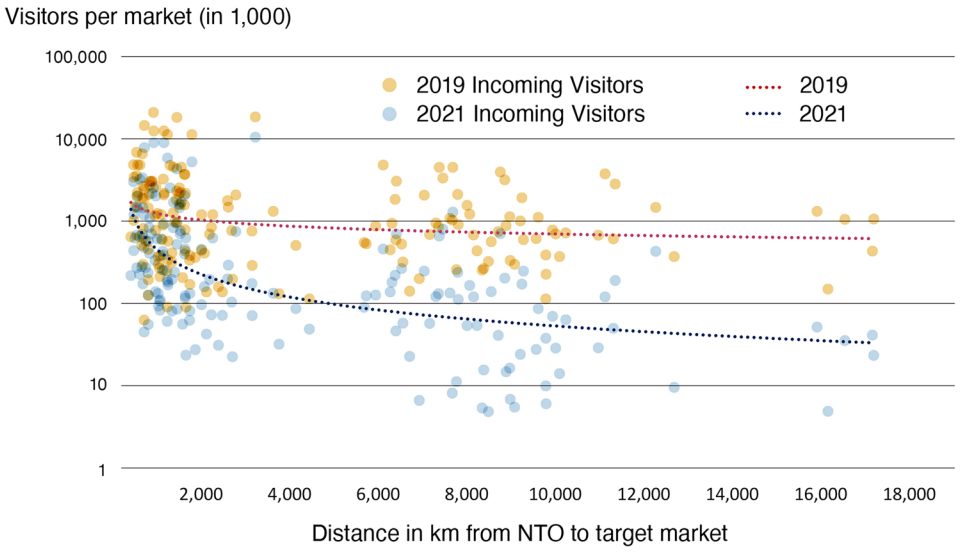

Figure 6. Effect of COVID on visitor flows in relation to distance, 2019 and 2021*.
*Includes Austria, Canada, France, Germany, Italy, Spain, Sweden, Switzerland, UK, USA

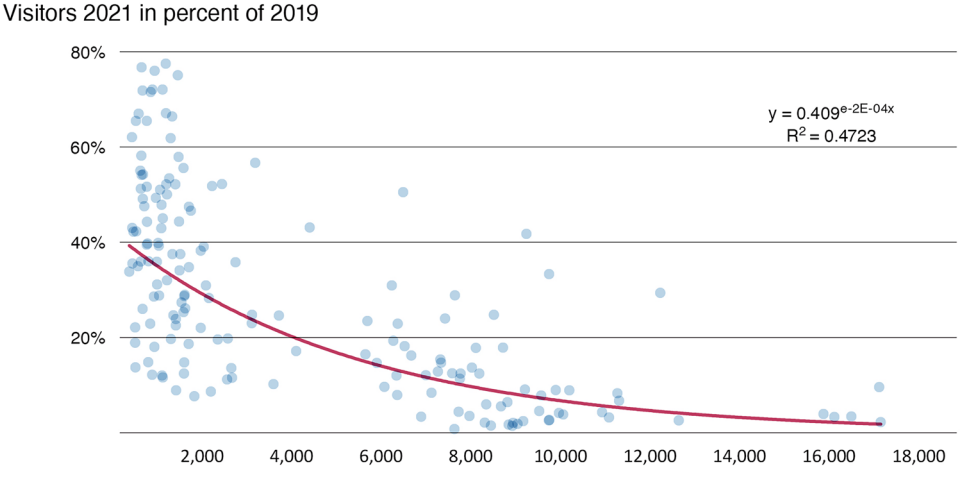

Figure 7. 2021 arrivals as share of 2019 arrivals*.
*Includes Austria, Canada, France, Germany, Italy, Spain, Sweden, Switzerland, UK, USA

To better understand disruptive effects, the percentage share of arrivals from all markets is plotted against distance in Figures 6 and 7. Figure 6 illustrates this in a direct comparison of visitor flows for 2019 and 2021 (logarithmic scale). Figure 7 depicts this relationship as the percentage of visitors from markets that have returned in 2021. The data reveals significant recovery differences between closer and more distant markets: a destination with closer markets is more likely to rebound after a disruptive event, and hence more resilient. As the figures show, far higher shares of closer markets returned in the second pandemic year, while in particular long-haul markets practically seized to exist. Many of the nearer markets (up to 2,000 km)

continued to remain relevant even in the second pandemic year, while arrivals from the most distant markets declined to below 10% of 2019 arrivals. This may have been a result of various aspects, such as limited access (flight restrictions) or tourist demand response outcomes (higher cost of air travel; travel fears).

A key question of this research concerns emissions. As highlighted, emissions are considerably higher for visitors from long-haul markets. As the approximation of emissions per arrival from different markets reveals, long-haul arrivals in the sample cause emissions an order of magnitude higher than those from short-haul arrivals (0.2 t CO_2 per visitor for markets < 3,000 km vs. 2.5 t CO_2 per arrival for markets > 10,000 km; see also Table 2, Methodology for calculations). Emissions from closer markets, such as neighbouring states, may even be lower, as arrivals will more often be by car, bus or train (UNWTO, 2023b), i.e. by transport modes that are less energy intense. Figure 8 illustrates this interrelationship for the sample of NTOs: even though nearer markets represent much higher visitor numbers, they lead to far lower emissions than medium and long-haul markets (logarithmic scale).

Last, it is of relevance to understand arrivals in relation to length of stay (Oklevik et al., 2019). As a general expectation, long-haul arrivals should stay for longer periods, as the relative cost and effort to visit a destination is higher for travellers from more distant markets. This is one reason, apart from higher per capita spending and

Table 2. Overview of characteristics for short, medium and long-haul markets to Europe.

Market	Short <3,000 km	Medium 3,000-10,000 km	Long >10,000 km
Drop in visitation (2021 vs. 2019)	−60.9%	−85.6%	−94.9%
CO_2 (tons) per visitor (*return flight*), 2019	0.2	1.4	2.5
Total visitors (million), 2019	236.4 (84%)	41.7 (15%)	4.3 (2%)
Total emissions (Mt CO_2), 2019*	40.7 (38%)	56.7 (52%)	11 .0 (10%)

*Approximation air transport, with one passenger kilometre being calculated at 0.09 kg CO_2. Tons of CO_2 per visitor multiplied with total visitor numbers do not add up to total emissions, as arrivals have been weighted for distance.

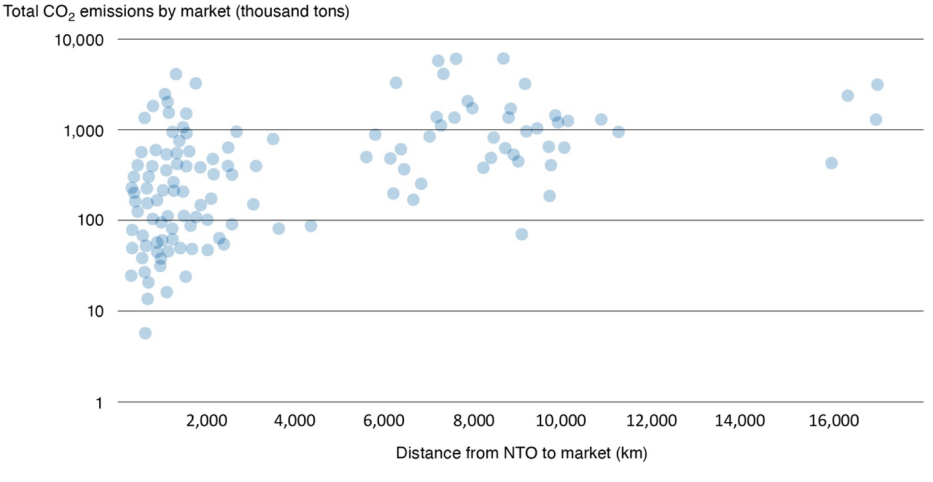

Figure 8. Approximation of emissions (total CO_2 per market)*.
*No regression line: one passenger kilometre is calculated at 0.09 kg CO_2 and hence proportional to distance; **includes Austria, Canada, France, Germany, Italy, Spain, Sweden, Switzerland, UK, USA**

seasonal visitation interest, that would potentially justify long-haul arrivals. To test this hypothesis, available data for Austria is analysed. Figure 9 shows that there is a tendency for length of stay to fall with distance, from 3.43 days for close (<3,000 km) to 2.45 days (>10,000 km) for long-haul markets. One possible explanation is that visitors from more distant countries are more likely to also visit other European countries as well, spending time in different locations. To attract such markets (here: to Austria) will consequently benefit other European countries. It may also be speculated that long-haul tourists visiting multiple European countries may contribute to additional air travel within Europe, as for instance Australians or North Americans will be less familiar with train systems and prefer to rely on air transport when moving between countries within Europe. These interrelationships are preliminary and require further analysis.

Table 2 summarizes these findings for short, middle and long-haul markets. Data illustrates that distance is a factor in market stability, as COVID-19 led to a much more tangible decline in middle distance and long-haul arrivals. This is likely to become relevant even in the event of other, less significant disruptions, including other pathogens, wars, or travel cost changes. While only indicative, COVID-19 may thus be considered an indicator of market sensitivity to future disruptions.

Table 2 also points to the importance of emissions per arrival, with every long-haul arrival causing at least ten times the emissions of a short-haul arrival. Even though long-haul arrivals only constitute 2% of the 282 million international arrivals in the 12 destinations, they are responsible for an estimated share of 10% of emissions (approximation based on 108 Mt CO_2 in theoretical air transport emissions). Including

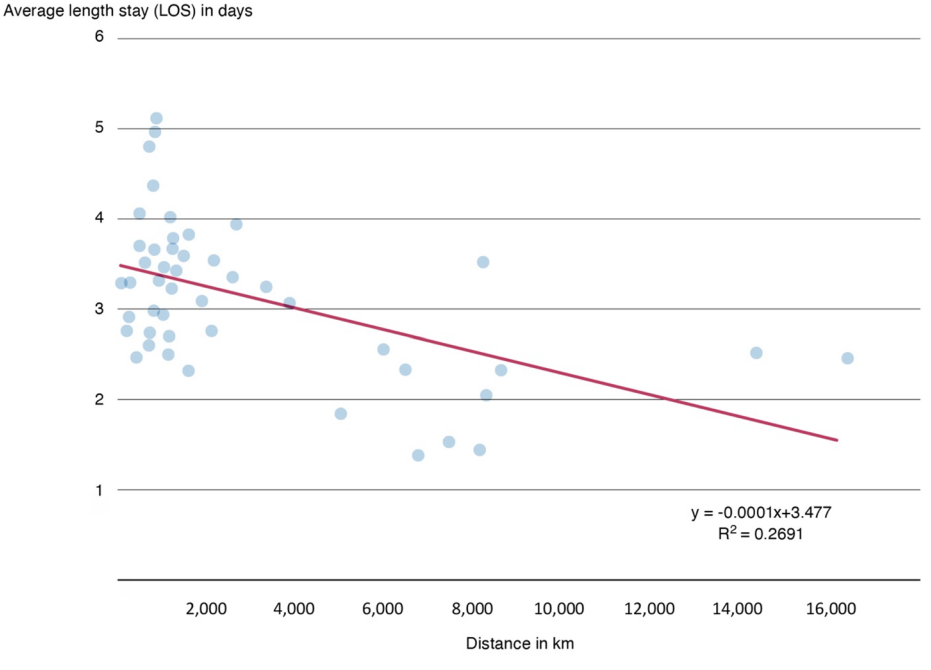

Figure 9. Average length of stay in relation to arrival distance, Austria*.
*(data for 2016)

medium-haul markets suggests that some 17% of arrivals cause 62% of emissions. Closer markets, in comparison, represent 84% of international visitors, and 38% of emissions. While this estimate needs to be confirmed for the actual mix of transport modes used and their carbon intensity, it serves as a clear indication of the relevance of long-haul tourism in the generation of emissions: theoretically, in the countries studied, each long-haul arrival replaced by a short-haul visitor will reduce global emissions by 2.3 t CO_2. These figures illustrate the importance of arrivals and transport mode shifts for Europe: in a theoretical scenario reducing medium and long-haul arrivals to zero, and a modest change in transport mode shifts from air to road or rail would reduce CO_2 emissions by two thirds, even though this would only affect 17% of arrivals.

5. NTO marketing-adjustments can be win-wins

It is evident that tourism is a major contributor to climate change, and increasingly affected by climate change (UNWTO-UNEP-WMO, 2008; Scott et al., 2019). To reduce emissions from tourism and to simultaneously increase destination economic stability is consequently paramount (Gössling & Higham, 2021; Weaver et al., 2022). This paper investigates the role of NTOs in inducing energy-intense long-haul travel, given evidence that destinations invest large sums to attract visitors from diverse markets. Even though this has not been evaluated, findings may also be relevant for Destination Marketing Organizations (DMOs) that engage in their own marketing efforts. Tour operators and travel agents selling long-haul trips or trying to attract visitors from distant markets are another group to consider the implications of this research.

Marketing data shows considerable differences in the share of arrivals from 'managed' markets, the number and diversity of these markets, as well as the average distance to markets. These reveal that marketing efforts are a choice, though the reasons for differences are ultimately not understood, possibly diverse, and deserving further investigation. Whether climate change has any relevance for NTOs' promotional decisions thus remains unclear: some discuss interrelationships (e.g. Norway; Visit Norway, 2023), but this does not necessarily outweigh other strategic considerations.

This research also shows that marketing efforts have relevance for destination stability. Three interrelationships have been investigated. First, there is the issue of climate change itself as many destinations will destabilize and become increasingly unsuitable for tourism (Scott et al., 2019). Long-haul marketing directly contributes to this development, as tourism is a major driver of global emissions (Lenzen et al., 2018). In the 12 destinations studied, the comparably small share of long-haul arrivals – 2% of all international tourist arrivals - is responsible for an estimated 10% of transport emissions. Second, long-haul markets are more susceptible to disruptions, as evident from the comparison of 2019 and 2021 arrival data: to attract a large share of international arrivals creates risks. As the cost of holidays is likely to increase because of insurance and adaptation needs, the rising cost of food, as well as carbon taxes and the higher cost of renewable fuels, planning for resilient markets should be a priority. Long-haul markets are likely to face the steepest cost increases because of their carbon intensity. Third, research into average length of stay indicates that

long-haul markets are not necessarily desirable, as length of stay appears to decline with distance. This is a finding based on data for Austria, and hence only indicative, but it stands to reason that in Europe, other destinations are likely to be co-beneficiaries of individual NTO's long-haul marketing efforts.

As discussed in the introduction, critics of NTO marketing have pointed to the superfluousness of destination marketing efforts in contemporary tourism (Hay, 2020, 2021), and called for their closure or reorganization. Findings in this paper suggest that NTOs continue to be needed, though for different reasons. While many NTOs appear to pay lip service to climate change, ultimately seeking continuous growth in tourism systems, there is much room to re-scale, optimize, and trial new destination marketing regimes. Under a climate change mitigation directive, NTOs would seize marketing efforts in long-haul and some medium-haul markets. They would focus on the development of stable tourism systems that bring benefit to society rather than the large firms driving global tourism expansion (Gössling et al., 2024). Such alternative destination models and their benefits have already been discussed, containing elements of avoided leakage, market segmentation and optimization, increased average length of stay, and regional economy advancement (Gössling & Higham, 2021; Oklevik et al., 2019). In such a scenario, NTOs would pursue low-carbon agendas and engage in different tasks under an umbrella of destination resilience. These tasks may include the optimization of tourism systems (length of stay, spending, avoided leakage, regional economy) and emission reductions (arrival modes, efficiencies, renewable energy use, low-carbon foods). NTOs would also consider adaptation efforts and collect data on various indicators to monitor progress.

Any of this will require a stark shift from current NTO perspectives. As highlighted by Jørgensen (2023), the European Tourism Indicator System for Sustainable Destinations (ETIS) and The Global Sustainable Tourism Council Criteria (GSTC-C) are widely used by destinations to evaluate their sustainability. Of relevance is also the Global Destination Sustainability Index (GDS) that ranks destinations based on 70 indicators (environment, social progress, suppliers, and destination management performance). Yet, as Jørgensen (2023: 4) underlines, transport is not considered by the indicator:

> Given that the airline industry is among the biggest emitters in the tourism industry […], it is particularly notable how little this is accounted for in the index. Five of the 205 total points relate to airports themselves, but these exclude flight emissions.

This would confirm that efforts to measure climate change impacts continue to be rudimentary, and that greater emphasis must be put on climate change mitigation by NTOs and the owners of certification systems. Responsibility is also with politicians, who can for example influence the share of the social cost of carbon that is internalized (Tol, 2023).

These insights are summarized in Table 3, defining new roles for NTOs, with examples of destinations already engaged with mitigation. As has been outlined, NTOs can have diverse marketing purposes, including rebranding (as in Macao); segmenting and targeting specific markets (as in Ireland); or the positioning of specific tourism products (as in New Zealand). There are also goals of integrating and coordinating tourism resources (Pechlaner et al., 2009); niche marketing (e.g. eco-tourism; Riege &

Perry, 2000); de-marketing (as in over-visited destinations such as Venice; Nepal & Nepal, 2021). Ultimately, all of these strategies rely on changes in communication (McCabe, 2010) and can be aligned with climate change goals.

Table 3 illustrates this on the basis of marketing activities that NTOs (and in some instances DMOs) have initiated. As the examples reveal, there are multiple possible inroads for refined marketing objectives. These can serve as best practice examples for NTOs to follow, though destinations may also look strategically into the interrelationships discussed in this paper: arrival distance by market, emissions per arrival, sensitivity to disruptions, length of stay, and, possibly, spending. Through such assessments, tourism benefits can be maximized, while also supporting climate change mitigation efforts. Results indicate that such shifts will be much easier for the European NTOs, and their access to closer markets.

In terms of its theoretical contributions, the paper has relevance for the field of transformative governance, which Weaver et al. (2022: 1) propose as a viable approach for enhancing system stability through micro-transformation, based on 'constructive manipulation of stakeholder values'. Weaver et al. (2022) emphasize that transformative governance becomes crucial in situations where a system is not only threatened by a crisis but also partly responsible for it; this describes the arrival - climate change nexus rather well. NTOs are publicly financed institutions that contribute to social norm generation such as the desirability of long-haul travel. They have influence on accessibility of countries, including visa requirements (politics), connectivity (airline routes), or specific offers made to travellers. A soft transformative governance approach takes place within low-risk thresholds (ibid.), where shifts in marketing focus are unlikely to challenge the overall viability of the tourism model. Climate change, if unabated, will (Scott et al., 2019). This perspective is in notable contrast to the observed expansion of air transport discussed elsewhere (e.g. Higham et al., 2022).

6. Final considerations

This research provides a comparative analysis of twelve National Tourism Organizations (NTOs), focusing on geographical marketing patterns. The findings reveal significant variations in the number of markets targeted, with most NTOs aiming to attract affluent long-haul markets. This strategy has notable implications for climate change, as emissions per tourist arrival can differ by more than an order of magnitude across the markets studied. Additionally, the research assesses the impact of COVID-19, indicating that long-haul markets are more susceptible to disruptions. This vulnerability is likely to increase due to climate policies that raise the cost of air travel, specifically in the EU, where aviation is part of the EU Emission Trading Scheme and obliged under the ReFuel directive to use a growing share of alternative sustainable fuels. Last, the data from Austria show that the length of stay decreases with travel distance, suggesting that tourists traveling long distances prefer to visit multiple countries in Europe. While the situation in North America is somewhat different due to larger average travel distances and a lack of competing countries to visit, as well as less ambitious aviation climate policies, NTOs in all countries may nevertheless consider the desirability of long-haul marketing against these findings.

Table 3. Examples of NTOs' diversified marketing objectives and activities.

Marketing objective	Activity	Approach	Example	Relevance	Reference
(Re)branding	Focus on specific narratives, slogans, images, brands, and stories.	Embracing climate change in positive ways in communication.	Juist (Germany) defines itself as a 'car-free paradise'.	Climate change engagement to attract specific markets and visitation across generations.	www.juist.de
Segmentation	Segmenting and profiling tourists in terms of their demographic, cultural characteristics.	Analysis of expenditure and emissions.	Norway.	Less profitable markets are no longer prioritized.	www.business.visitnorway.com/en/english/ https://www.innovasjonnorge no/nyhetsartikkel/ny-utslippskalkulator-estimerer-turisters-co2-utslipp
Positioning	Proposing a unique value to prospective visitors.	Promise of car-free mobility.	Alpine Pearls.	Positive spin on change, i.e. as 'added value' for visitors.	www.alpine-pearls.com
Integration and coordination of marketing resources	Sharing of information, coordination.	Mandatory nationwide certification.	Turkey.	Performance indicators have to be adopted by industry.	www.tga.gov.tr/sustainable-T&T-program/
Niche marketing	Focus on a specific small market that can make important contributions to destination.	Development of small high-quality markets.	Norway.	National platform to identify eco-certified providers.	www.visitnorway.com/plan-your-trip/green-travel/sustainable-destinations
De-marketing	Marketing efforts to reduce or divert demand.	Taxation of day visits depending on tourist pressure.	Venice.	Optimization rather than maximization of tourism.	https://venezia autentica.com/venice-tourist-tax/
Marketing communication	Designs and communication of narratives, slogans, images, brands, and stories *via* advertising, social media.	Outreach and reception of positive reporting on climate change mitigation efforts.	Climate and Energy Regions, Austria.	Climate change is a self-evident part of all actions in the destination.	www.klimaundenergiemodellregionen.at/

Source: Examples compiled by authors.

Future research into the soft transformative governance potential of NTOs may investigate a larger and more diversified sample of countries. Ideally, this would include a better understanding of NTO perspectives on climate change and decision-making processes: who decides on marketing efforts, and based on which considerations? With a view to the findings in this paper, the reasoning of NTO representatives currently remains a black box.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Notes on contributors

Stefan Gössling is a professor of tourism at Linnaeus University, Sweden, and a research coordinator at the Western Norway Research Institute. He has worked with tourism, transport and climate change since the early 1990s.

Ralf Vogler is a professor in tourism at Heilbronn University. He currently holds a research professorship for tourism policy and tourism development. He also serves as dean of studies for tourism management.

Andreas Humpe is a professor in Mathematics and Finance at the Department of Tourism at Munich University of Applied Sciences, Germany and part of the Institute for Applications of Machine Learning and Intelligent Systems (IAMLIS). His main areas of research include environmental sciences, transportation, and mathematical modelling. He holds a PhD degree in Econometrics and four Master's degrees in Finance and Investment Management, Intelligent Systems and Robotics, Advanced Manufacturing Systems, as well as Astrophysics.

Ning (Chris) Chen is an associate professor in marketing at the University of Canterbury, New Zealand, and a Kyung Hee International Scholar at the Department of Geography, Kyung Hee University, South Korea. His primary areas of research interest include identity and attachment theory in different context including place, branding, tourism, entrepreneurship, and sports. His research keywords include: place attachment, brand attachment, social identity, and word-of-mouth (mouse).

ORCID

Stefan Gössling http://orcid.org/0000-0003-0505-9207

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