

Tourism territories: Challenges for decarbonisation

Territorios turísticos: desafíos para la descarbonización

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ABSTRACT

This paper aims to analyse the energy challenges faced by tourism territories in a critical climate scenario. The methodology is based on consulting secondary information sources from government reports, regulatory frameworks, and specialized bibliography. The results show that the main challenges for decarbonization are linked to the continued growth of tourism, the institutionalization of interests, policy formulation, difficulty in introducing improvements and radical changes, a focus on technologies, and the dissemination of scientific and institutional knowledge. Thus, it is concluded that current tourism appropriation is incompatible with global climate objectives, and to overcome the six challenges outlined above, a commitment from all stakeholders is needed. In addition, each territory presents different challenges to achieve this, as these transition processes involve different factors (economic, political, social, cultural, technological, and environmental) that affect each other and involve multiple actors with different interests, logics, and power capacities.

Keywords: *tourism, decarbonisation, energy transition.*

RESUMEN

En el presente trabajo se propone como objetivo analizar los desafíos energéticos que enfrentan los territorios turísticos en un escenario climático crítico. A fin de lograrlo, este estudio se fundamenta en la consulta a fuentes de información secundarias provenientes de informes gubernamentales, marcos normativos y bibliografía especializada. Los resultados arrojan que los principales desafíos para la descarbonización se vinculan: al crecimiento continuo del turismo, a la institucionalización de los intereses, a la formulación de políticas, a la dificultad de introducir mejoras y cambios radicales, a un enfoque centrado en las tecnologías y a la divulgación del conocimiento científico e institucional. De este modo, se concluye que la apropiación turística actual es incompatible con los objetivos climáticos globales, y a fin de superar los seis desafíos enunciados, resulta necesario un compromiso de todos los actores intervinientes. A lo expuesto, se añade se cada territorio presenta diferentes retos para lograrlo, ya que en estos procesos de transición intervienen diferentes factores (económicos, políticos, sociales, culturales, tecnológicos y ambientales) que se afectan entre sí, e involucran a una multiplicidad de actores con distintos intereses, lógicas y capacidades de poder.

Palabras clave: turismo, descarbonización, transición energética.

INTRODUCTION

Climate change is the main environmental challenge facing societies in the 21st century, driven by anthropogenic greenhouse gas (GHG) emissions and those naturally released into the atmosphere. These processes contribute to global warming, threatening the planet's climate stability. The search for solutions to this global problem has been the subject of international discussions, conferences, and agreements since the 1970s. Currently, global commitments are focused on fulfilling the Paris Agreement and the 2030 Agenda for Sustainable Development, which are positioned as an alternative to respond to the problems caused by unsustainable production and consumption models. Countries have committed to carry out policies and actions aimed at reducing GHG emissions, with an emphasis on those anthropogenic activities responsible for the greatest emissions. In particular, the energy model that shapes and structures the world today is 82% dependent on fossil fuels (International Energy Agency [IEA], 2018), being responsible for 2/3 of global GHG emissions (International Renewable Energy Agency [IRENA], 2019).

In search of the decarbonisation of the current energy model

In a critical climate scenario, transitioning from the current energy model - dependent on fossil fuels - to a more diverse and sustainable one acquires relevance in global agendas. This is contemplated in the Paris Agreement, which focuses on reducing greenhouse gas emissions to keep the global average temperature at no more than 2°C, to limit it to 1.5°C (United Nations, 2015a). On the other hand, the 2030 Agenda sets out 17 Sustainable Development Goals (SDGs), including SDG 13 on climate action, which proposes targets related to climate change mitigation and adaptation. Likewise, SDG 7 stands out, linked to ensuring access to affordable, safe, sustainable and modern energy for all (United Nations, 2015b). Therefore, there is an intrinsic relationship between measures to combat climate change and the energisation processes of the territories. In this context, the rational use of energy (RUE), energy efficiency (EE) and renewable energies (RE) are positioned as effective strategies to face the growing global demand for energy, to diversify the energy matrix dependent on fossil fuels and, indeed, to mitigate greenhouse gas emissions that are detrimental to the sustainability of the planet (Pasquevich, 2012; Brunstein & Carrizo, 2015; Kern & Markard, 2016; IEA, 2018; IRENA, 2020).

The RUE is linked to actions to reduce energy consumption through efficient and smart energy use (Ham, 2016). It's subject to the consumption habits of each individual, such as turning off lights when they are not needed and closing doors and windows when air conditioning equipment is on, among others (Pasquevich, 2016). In other words, RUE requires understanding and analysing how energy is used in a given situation linked to EE. The EE consists of using the least amount of energy possible to obtain the same level of energy service without affecting the quality of the well-being sought (World Energy Council, 2012; Gil, R., Iannelli & Gil, S., 2015). However, the World Energy Council (2010) states that reductions in energy consumption are generally associated with technological changes but can also result from better organization and management or behavioural changes (RUE), which are also referred to as "non-technical factors." Energy consumption depends on the time and power used by the equipment. Therefore, the World Energy Council (2015) adds that to conserve energy, one should change habits and choose efficient equipment by consulting the EE label. This is an instrument designed so that the user can know the energy performance of a piece of equipment or building, by visualizing different EE classes categorized by colors and letters (Inter-American Development Bank [IDB], 2015), so green is the most efficient and red the least efficient; and the letters that define it vary according to the type of equipment (household appliance, gas appliance, transport), the type of building and the regulations in force.

In relation to RE, these come from renewable resources. In other words, those with the capacity to recover naturally and continuously (World Energy Council, 2012). These include: the solar energy (harnesses radiation from the sun and converts it into heat [photothermal] or electricity [photovoltaic]); wind energy (harnesses the kinetic energy of the wind, converting it into mechanical or electrical energy either through windmills or wind turbines); biomass (use of materials from living animals or plants); hydropower (conversion of the kinetic and gravitational potential energy of water into mechanical energy that is finally transformed into electrical energy); tidal energy (energy obtained from the movement of the tides); and geothermal energy (harnesses the heat that can be extracted from the earth's crust and transforms it into electrical energy or heat).

Consequently, IRENA (2020) argues that the implementation of strategies linked to each of the pillars mentio-

ned above will contribute to providing access to energy services in a secure manner to the entire population and to present and future territories; to reducing energy consumption, associated financial costs and GHG emissions. In this way, it is imperative to consolidate the path towards decarbonisation and efficient energy use.

Tourism territories in a critical climate scenario

Tourism appropriations don't escape these challenges, as they are responsible for 8% of global emissions and their energy trajectories are incompatible with current climate targets (Lenzen, et al., 2018; Becken, 2019; Gössling & Higham, 2021; Scott, 2021). In this context, Olcina (2012) states that:

If we consider tourism as a GHG emitting country as a whole, it would occupy 5th place, behind the United States, China, the European Union and Russia; so we are facing an economic activity with a great impact in relation to the control of GHG emissions causing global warming and which requires urgent measures to prevent further increases in emissions worldwide. (p. 16).

The World Tourism Organization (UNWTO, 2016) states that: "Tourism both contributes to and is affected by climate change. It is therefore in the sector's own interest that it plays a leading role in the global response to climate change" (p. 3). In line with this, several authors agree that tourism territories face two major challenges: mitigation and adaptation to climate change (Scott, Hall & Gössling, 2015, 2016; Becken, et al., 2020; Gössling & Higham, 2021).

This work focuses on mitigation. For this reason, the aim of this paper is to analyse the energy challenges faced by tourism territories in a critical climate scenario.

METHODOLOGICAL APPROACH

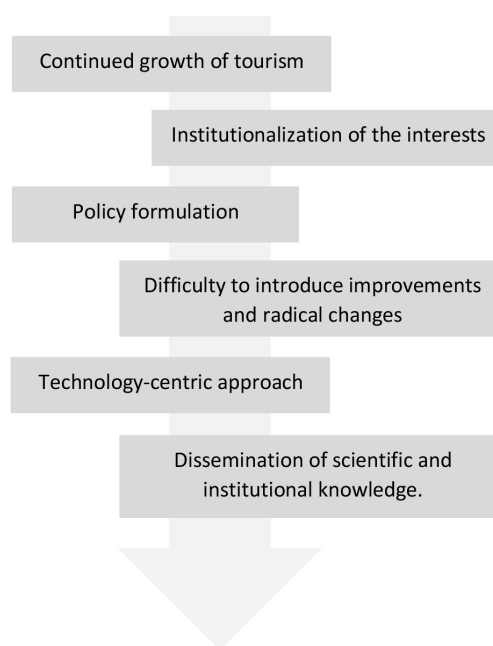
The study adopts a qualitative-quantitative approach, mediating access to secondary sources of information. This bibliographic review exercise consists of access to reports from international organizations linked to climate change and the energy transition (United Nations, IEA, World Energy Council, IRENA, among others). Furthermore, in this work documents from institutions linked to the tourism sector (UNWTO, International Civil Aviation Organization [ICAO], among others) were used. Finally, a specialized bibliography was consulted on decarbonization processes in tourism, RUE, EE, and ER at different spatio-temporal scales.

RESULTS AND DISCUSION

The academic debate on the relationship between tourism and climate change has deepened recently (Becken, 2013; Velasco, García & Barquín, 2014; Loehr & Becken, 2021; Scott, 2021). This is evident in the background review, which highlights studies that focus on their analysis of the effects of climate change in tourist areas and how they can be adapted (Kaján & Saarinen, 2013; Olcina & Vera Rebollo, 2016; Martín, López & Iglesias, 2017). At the same time, other research emphasizes the role of tourism as a contributor to global GHG emissions, where actions aimed at mitigation are identified (Gössling, et al., 2010; Gössling & Scott, 2018; Lenzen, et al., 2018 ; Becken, 2019). At the same time, in recent years academic works and government reports have been detected that show that the use and consumption of energy based on fossil sources in the tourism value chain are determinants of GHG emissions (Teng et al., 2012; Huang, et al., 2015). Consequently, some studies focus their analysis on strategies linked to URE, EE and RE in tourist territories (Maciel et al., 2015; Nogar & Flensburg, 2016; Rodríguez Cruz, 2018; Escobedo, et al., 2019; Flensburg, 2024).

Based on the documentary review, six challenges to the decarbonisation of tourist territories (Figure 1) can be identified. These don't imply that they are the only ones, but they are the main ones.

Figure 1. Challenges for decarbonisation



The first challenge is the continued growth of tourism. In the 1950s, 25 million international visits were recorded, rising to 1.5 billion in 2019 (UNWTO, 2019). This growth in the flow of tourism generates economic, social, and environmental implications in the territories. The latter, various sources state that given the relationship between tourism and the environment, it is closely linked to global warming processes (Gössling et al., 2010; Peeters & Landré, 2012; Dwyer, 2018). In this scenario, Fernández & Sánchez (2014), Olivera & Cristóbal (2014) and Lastra Bravo et al. (2015) affirm that from the moment tourism appropriation of territories is promoted, actions are manifested that involve, among others, the use of fossil fuels, deforestation processes and changes in land use with their consequent environmental imbalances. In this sense, the report published by UNWTO & UNDP (2008) states that in 2005: "Tourism contributed approximately 5% to total global CO₂ emissions" (p.21). The report published by Lenzen, et al. (2018) states that: "Between 2009 and 2013, the global carbon footprint of tourism has increased from 3.9 to 4.5GtCO₂e, four times more than previously estimated, representing approximately 8% of global GHG emissions" (p. 1). Both documents point to transport (specifically aviation), tourist accommodation, and other services as the main contributors to these emissions. It should be noted that transportation faces difficulties in reducing GHG emissions due to its rapid growth, its energy intensity and the high cost of technological change (Peeters et al, 2016; Higham, et al., 2019; Larsson et al., 2019). The same happens in tourist accommodations, since they experience high energy consumption, specifically of fossil origin, being partly responsible for GHG emissions (Huang et al., 2015; Abeydeera & Karunasena, 2019; Jaraba et al., 2020; Melo et al., 2021).

Scott et al. (2016) argue that tourism stakeholders have ignored this issue for decades and pursued growth strategies without considering the implications for climate change. In terms of Peeters et al. (2019), these strategies have created vulnerabilities, including environmental externalities that must now be considered. In this way, and given the instability observed in the global tourism system and the tendency to become more vulnerable, Scott et al. (2019) consider it imperative to promote profound changes in the management approaches of tourism territories, where the materialization of actions focused on the reduction of energy consumption and the use of renewable sources is key, to face the climate challenges of the 21st century.

In 2020, tourism suffered the repercussions of the Covid-19 pandemic, with a 74% drop in international arrivals (UNWTO, 2021). The pandemic has led governments to take extraordinary measures, with health fines, limiting the transit of people and goods, closing borders, and suspending and interrupting activities (Varela & Urdangarin, 2020; Mantecón, 2020). This situation has led to a short-term decline in emissions (Le Quéré et al., 2021; Hiernaux, 2021; Friedlingstein et al., 2022; Gössling et al., 2023). The UNWTO (2024) report establishes that international tourism will reach pre-pandemic trends in 2024. This implies recovering the associated GHG emissions trajectories.

In line with what has been stated and recognizing the need to modify and minimize the emissions trajectory, the UNWTO (2018) states that it is transcendental to promote initiatives linked to ecological design, new equipment and technologies, renewable energies, recycling and waste, landscape protection, awareness campaign, and others. In this sense, Becken (2019) recognizes that concern about climate change has become part of public discourse (Dwyer, 2018), but actions (individual and collective) remain marginal and are often balanced against the personal or economic benefits of tourism (Higham, Cohen & Cavaliere, 2014).

The above leads to the second challenge for the decarbonization of tourism, which has to do with the institutionalization of the interests (Becken, 2019). This challenge is based on the belief that growth has been institutionalized and the concomitant structures provide increasingly powerful greater than a small number of key actors who support the prevailing ideology. This "elite" has successfully built a system that promotes their interests and offers few opportunities for alternative points of view. In terms of Kilbourne, Beckmann, & Thelen (2002) and Becken (2019), changing political or economic structures exists is not in the interest of decision makers, as this could result in a loss of power.

For its part, Gössling & Scott (2018) analyze the perspective of 17 tourism leaders (UNWTO, UNEP; aviation [IATA, ATAG], cruises [CLIA], tour operators, private sector, and others) regarding the problem of climate change. While there was full agreement that the climate is already changing and that tourism must contribute to mitigating it, there was no consensus on achieving this. In this way, the authors identify three types of leaders. Firstly, the leaders in decarbonization stand out, who recognize the need to promote mitigation

actions immediately through policies, financing lines, and sociocultural change. Secondly, the authors mention the technological optimists, who revealed less urgency regarding the need for mitigation, expressing their belief that technology would significantly contribute to reducing emissions. They consider the promotion of policies that increase the process of technological innovation. Third, the authors recognize the conservatives of the economics of carbon, who state that tourism does not need decarbonization fast since this (in relation to other sectors) does not emit a significant amount of GHG. Consequently, the leaders revealed different points of view and even contrasting differences on mitigation, making it difficult to identify strategies that the actors can adopt as a whole.

This is linked to the third challenge associated with policy formulation. Becken (2019) suggests that politicians avoid getting involved in unknown topics that may include risk and negative connotations at the time of management, thus creating policies based on what is known and desirable futures (Peeters et al., 2019). For his part, Scott (2021) states that: "Those in charge of formulating policies and tourism planning appear to be disconnected from the substantive scientific literature available" (p. 23). Likewise, Magrin (2015) and the United Nations (2019) add that the shortcomings of climate action are not due to a lack of solutions but instead to the absence of political will and the materialization of specific actions, which make it impossible to make improvements and radical changes. This last constitutes the fourth challenge. In this sense, Becken (2019) argues that instead of accepting the imperative to reduce GHG emissions and work to achieve it: "(...) tourism continues to adopt a position of extrapolation of past trends and hopes that they will somehow converge with decarbonization goals" (p. 11). However, various studies show the different strategies based on cleaner technologies that have been implemented in recent years throughout the value chain (Lastra Bravo et al., 2015; Molina & Arias, 2016; ICAO, 2016; Cingoski & Petrevska, 2018; Peeters et al., 2019). In this scenario, the fifth challenge is identified, which is linked to the existence of an approach focused on technologies, leaving sociocultural issues (behaviors, consumption habits, etc.) in the background. The above requires collective action requiring greater integration between human resources and technological innovations through communications and training that guarantee efficient use.

The sixth challenge is linked to the dissemination of scientific and institutional knowledge. According to all of the

above, producing academic-scientific knowledge on current energy trajectories in tourist territories becomes relevant. Multiscalar and multidimensional analysis is key to these challenges. In fact, Scott (2021) maintains that: "(...) research must be proportional to the scale of massive information needs between the local and the global for tourism to respond effectively to the climate crisis" (12). For their part, Loehr & Becken (2021) point out the lack of holistic approaches that critically address challenging questions about tourism's role in a climate crisis context. A common limitation to knowledge production is the lack of solid and context-specific data, making decision-making difficult. Likewise, the authors recognize other limitations, including the differences in institutional environments (academic, public, and private), including divergent objectives, needs, and priorities, representing a significant barrier to the production and mobilization of knowledge from the management academy. According to Moyle & Col (2017) (cited in Loehr & Becken, 2021), "Literature tends to raise problems instead of providing solutions" (p. 704). For the authors, this generates a disconnection between knowledge production in academia and decision-makers' need for practical solutions. However, the authors recognize discrepancies in the information exchange circuits from public management and the private sphere to academia since there are often difficulties in accessing statistics, management reports, etc., generating knowledge gaps, inaccessibility, and lack of exchanges. However, it may happen that it is not due to a lack of will to socialize the data but rather that the data may not exist. Hence, the challenge for academics lies in collecting their own data to study a specific reality and produce and disseminate knowledge. According to the contributions of Scott (2021), to overcome these knowledge gaps, it is necessary to improve communications and knowledge mobilization, increase research capacity, and (re)build synergies between planners, politicians, academics, and private actors. Furthermore, the author notes that much research is needed to inform the low-carbon transition in all components of the tourism system, from international aviation and tourist accommodations to destination management and traveler behaviors (Scott & Gössling, 2018; Gössling & Higham, 2021).

CONCLUSIONS

Thus, it is concluded that current tourism ownership is incompatible with global climate objectives. A commitment of all stakeholders in the medium and long term is necessary to overcome the six challenges identified.

The decarbonization of tourism territories is possible by incorporating strategies linked to RUE, EE, and RE and implementing sustainable production and consumption patterns. To this end, it is necessary to promote changes in energy appropriation models through education, the socialization of information, and the management of specific practices that users must incorporate. Likewise, these transition processes require developing and implementing new technologies and more efficient processes, reliable and secure long-term economic and financial support, and formulating policies that align with internationally agreed objectives, among others. These changes can start from the bottom up and be driven by tourism providers, consumers (tourists and excursionists), public administration representatives, and private associations.

These transition processes do not respond to a single pattern, are not linear, nor can they be programmed. They are multidirectional and arise from heterogeneous associations between agents and materialities, making them possible under specific conditions of existence. In addition, each territory presents different stages of progress in overcoming the challenges of decarbonization, as these transition processes involve different factors (economic, political, social, cultural, technological, and environmental) and a multiplicity of actors (located at different scales of action) with different interests, logics, and power capacities. These multidimensional, multi-scalar, and multi-stakeholder relationships act as drivers and barriers to decarbonizing tourism territories. Such linkages should not be avoided in research, as they enable a holistic and enriching approach to a problem that requires immediate action.

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