Behavioural science for sustainable tourism: Insights and policy considerations for greener tourism

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Behavioural Science for Sustainable Tourism: Insights and policy considerations for greener tourism

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This working paper explores the use of behavioural science for promoting environmentally sustainable tourism. It looks at how to use behavioural science to encourage sustainable behaviour, targeting both the consumers and suppliers of tourism activities and services. It concludes with recommendations for planning and implementing a tourism recovery strategy that prioritises both economic and environmental sustainability.

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Executive Summary

There is an urgent need to transform tourism more sustainable to guarantee the long-term economic, environmental, and social sustainability of the sector. Through five main entry points, this paper shows the benefits of designing and implementing responses that use behavioural science to empower individuals to shift their behaviours towards sustainable tourism policy outcomes:

1. Identify the needs, expectations, and behavioural blockers of today and tomorrow's tourists

The tourism sector is a complex ecosystem evolving to meet the changing demands of tourists. Employing behavioural science can help better anticipating the specific needs of different types of tourists through behavioural segmentation. This allows governments and tourism providers to better anticipate the needs and expectations of the tourism ecosystem and deliver effective, evidence-based solutions.

2. Make tourism human-centred and sustainable by design

Using behavioural levers such as default choice-setting, modifications in choice architecture, and framing can reduce the frictions that discourage sustainable behaviours. Even small changes in the way choices are presented to both consumers and providers of tourism can yield significant impact towards sustainability objectives, simply by making sustainable options easier, more rewarding, or more salient for their target audiences. Leveraging knowledge about human behaviour creates opportunities to embed a human perspective directly into the design and delivery of tourism services, products, and policies, that can increase the likelihood of their uptake and effectiveness.

3. Enhance communications on green tourism with evidence from behavioural science

Evidence from behavioural science can be used to enhance the impact of tourism communication and information by making messages, language, communicators, and visuals more likely to encourage sustainable behaviours. Behavioural science can also be applied to identify the optimal moment to provide information to empower tourists, employees, and key decision-makers to pursue sustainable choices by ensuring that information is delivered at the most critical time.

4. Leverage behavioural science for the supply and demand side of the tourism ecosystem

By analysing the habits of individuals, behavioural science is well situated to investigate the behaviours of tourists (the demand side). The approach is equally applicable for influencing the supply side, given that tourism goods and service providers are ultimately run by individuals. Insights from behavioural science can be leveraged to make behaviours on both the supply and demand side of the tourism ecosystem align with sustainability objectives. Behavioural science can be used to design traditional policy measures in a way that maximises their impact, but it can also suggest alternative interventions that directly target specific behaviours on either the demand or supply side to progress towards sustainability goals.

5. Broaden indicators of sustainability used to monitor progress

Entering into the phases of intervention scaling and evaluation also provides ample opportunities to adopt a behavioural perspective. Adding cognitive and social factors to the sustainability indicators used to monitor tourism practices would help governments and related stakeholders understand how and why tourists and tourism providers behave the way they do. Designing inclusive indicators would provide crucial insights into the systems that influence how and why individuals choose to or choose not to engage in

sustainable practices.

International best practices confirm the potential of taking a behavioural approach to advancing the sustainable tourism agenda. However, governments should consider conducting their own experiments to test the effects of behavioural practices before scaling to a wider population of tourists, private and public sector actors.

1 Introduction

As a sector deeply dependent on the movement and mobility of people, tourism was among the most severely impacted by the COVID-19 global health crisis. The severity of the pandemic has had both economic and social implications on a range of economies and communities, from global hospitality and transport sectors to local small and medium-sized enterprises and businesses (OECD, 2022). While tourism rebounded in 2022, recovery remains fragile as the economic fallout and consequences of Russia's large-scale aggression in Ukraine is creating new uncertainties and risks constraining recovery (OECD, 2022).

Prior to the COVID-19 pandemic, tourism directly accounted for 4.4% of GDP and 6.9% of employment in OECD countries, on average (OECD, 2020). In 2019, international tourist arrivals reached 1.5 billion, with domestic tourism accounting for a further 9 billion, but by 2020, dropped by 72% (OECD, 2020; UNWTO, 2020; 2021). Europe alone witnessed a 70% drop in revenues along with the loss of approximately 11 million jobs in 2020 (European Commission, 2022c). The shock to tourism quickly overflowed into related sectors, with suggested total losses up to three times greater than those endured by the tourism economy alone (OECD, 2021a). In response to such losses, governments around the world have had to develop strategies to recover the tourism sector to its pre-pandemic levels while simultaneously seeking opportunities to address the growing threats associated with climate change and move to more sustainable models of tourism development.

The consumer travel journey, from pre-travel preparations to post-trip satisfaction, prompts tourists to engage in a variety of behaviours and decision-making processes (Wattanacharoensil and La-ornual, 2019). Vacation-taking can elicit travel-specific and careless behaviours, causing tourists to deviate from their normal behaviours (Dolnicar, 2020). However, similar changes in behaviours are also observed among those travelling for meetings, conferences, or events and tourists engaging in domestic or international travel (Godfray et al., 2018). This shift in behaviours, which can influence when, where, and how tourists prepare for their trip, can provide useful insights into tourism trends, and serve to advance sustainable and eco-friendly choices among visitors.

Achieving sustainable tourism means establishing a carefully balanced consideration of environmental, economic, and socio-cultural factors in the development of tourism (OECD, 2021b). Similarly, the tourism ecosystem refers to the relevant stakeholders and actors both responsible for and impacted by the outcomes of tourism activities. This includes tourists (whether visiting for personal or business reasons), travel and leisure enterprises, local businesses and communities, investors, tourism providers, regulators and other decision makers (Del Chiappa et al., 2016).

Integral to achieving a sustainable balance is accurately identifying and involving the relevant actors and sectors that constitute the complex and evolving tourism ecosystem. Despite efforts from governments and businesses to steer individuals towards more sustainable tourism (for example in the form of provision of sustainable tourism products, eco-labels and certifications), there remains a gap between tourists' suggested environmental intentions and actual tourism choices and behaviours. Behavioural science can help us better understand these intention-action gaps, and other behaviours and cognitive factors influencing decision-making within sustainable tourism. Behavioural science offers promising avenues to explore and leverage these behaviours for achieving a tourism sector that considers its impact on the environment and preserves local communities.

2 Green Transition and Behavioural Change in the tourism sector

Green transition and tourism

Tourism is a sector that both depends greatly on the protection of the environment while simultaneously impacting it. Recent studies have estimated that tourism's carbon footprint ranges between 8% and 11% globally (OECD, 2022; WTTC and UNEP, 2021), and that during 2005-2016, greenhouse gas (GHG) emissions from tourism grew by at least 60% (OECD, 2022; UNTWO and ITF, 2019). Transport-related GHG emissions from tourism accounted for 5% of global emissions in 2016 (UNTWO and ITF, 2019), with implications for eco-efficiency of services and alternative travel patterns. As a sector calling for significant investment in a post-pandemic economy, the potential growth in tourism may secure its position as one of the main contributing sectors to climate change in the absence of active policies aimed at lowering its carbon footprint (OECD, 2022).

The tourism sector is a vital organ of the global economy, yet simultaneously, the tourism ecosystem also represents a cluster of high polluting sectors, including transportation, energy, electricity, water, and waste management. Consider the transportation sector, which consistently ranks as one of the highest emitters of carbon emissions. The International Transport Forum (ITF) estimates that the current policies in place to reduce GHG emissions from passenger air transport are not enough to sufficiently transform the sector to become more sustainable (OECD, 2022; ITF, 2021). Similarly, food waste constitutes a large fraction of hospitality waste (Filimonau and De Coteau, 2019), and food waste also serves as a high contributor to global GHG emissions. In 2019, food waste surpassed transportation as a top polluter by accounting for 6% of global GHG emissions (Ritchie, 2020).

Transportation and food waste are among many sources of GHG emissions closely tied to tourism, however data revealing their individual and combined emissions under the scope of tourism remains scarce. This poses a challenge to governments and decision-makers attempting to understand the full environmental impact of the tourism sector. To this end, the European Green Deal outlines various measures to improve the quality and accessibility of data towards goals of becoming climate-neutral by 2050 (Brühl, 2021). The European Green Deal, which stipulates the terms upon which sustainable practices are defined, measured, and assessed in the European Union (EU) and member states, is therefore an integral framework upon which EU member states' sustainability plans and outcomes will be assessed and has the potential to help understand the impact of the combined emissions from the tourism and various tourism-related sectors. When considering the environmental impact of tourism and initiatives designed to combat its impact on the planet, it is key to adopt a comprehensive perspective of tourism activities and services. From the carbon footprint of air travel, to the energy used to cool hotel rooms, to the plastic used for travel-sized shampoo bottles that clear airport security – each aspect welcomes opportunities to explore sustainable decision-making.

Challenges for sustainable tourism

Efforts were made already in the 1980s in developing principles and frameworks to advance the notion of "sustainable tourism" which emerged as a key concept of tourism development during that time (World Commission on Environment and Development, 1987). While significant progress has been made in recent decades to better understand tourism's impacts on the natural environment and host societies, and to mainstream the concept of sustainability in tourism policy, a more aggressive and innovative approach to sustainability within tourism is required to achieve ambitious green-transition and climate action objectives. More needs to be done, and with a greater sense of urgency.

Many tourism destinations have been embracing sustainability and taking action to address the environmental impacts of tourism, but this should be more universal. Similarly, tourism businesses, large and small, have introduced environmental management systems, although their application remains far from systematic. There are signs of an increasing visitor awareness and demand for more sustainable experiences, which may have been recently boosted by the pandemic, and the economic arguments for sustainable tourism are strengthening, including in the provision of new green investment, technologies, and jobs. However, despite growing awareness of responsible travel, empirical measures suggest that the global tourism economy is less sustainable than ever (Hall, 2019; Hall, 2013; Rutty, Gössling, Scott, and Hall, 2015; Scott, Gössling, Hall, and Peeters, 2016), and the estimated growth of future emissions from tourism despite the potential future improvements from technology, is one of the principal factors of why tourism is considered as unsustainable (Hall, 2013). Current efforts alone are insufficient at addressing climate concerns, which increases the urgency for innovative solutions that drive eco-forward approaches in tourism.

Behavioural insights and tourism

Achieving ambitious sustainable tourism policy objectives can be challenging since they rely to a large extent on individuals' behaviours and preferences. However, inspiring small changes among individuals can improve both commercial practices and sustainable tourism habits. Initiatives that motivate change on the individual-level to encourage aggregate-level outcomes are promising avenues for applying human-centred approaches. This is the driving force behind behavioural insights, which seeks to understand the impact cognitive, social, emotional, and cultural factors have on human behaviour to reduce the uptake of harmful or unsustainable practices (OECD, 2022).

As a discipline, behavioural science uses empirical testing through qualitative and quantitative methods such as randomised controlled trials (RCT), surveys or field experiments to generate evidence-based data about human behaviour and preferences and provide a behaviourally-driven analysis of what influences and shapes related decision-making processes and systems (OECD, 2017a). Behavioural approaches encouraging sustainable decision making have already been proven effective (OECD, 2017a, 2017b) for example in the area of reducing energy use (BETA, 2018), water conservation and management (eMBeD, 2021), increasing engagement in the circular economy (ConPolicy et al., 2018) and decreasing the consumption of single-use plastics (Suh et al., 2019).

Through related experimental research, behavioural scientists have been able to identify some cognitive barriers that influence the way individuals behave, as well as how they form opinions, beliefs and attitudes based on the information around them. Heuristics, for example, refer to the mental short cuts made by individuals to reduce cognitive burden (Blanco, 2017). These timesaving tactics oftentimes create cognitive biases, which can result in suboptimal outcomes. Similarly, the intention-action gap can be helpful in explaining the discrepancy between individuals' stated intention and their actual behaviours (Sheeran and Webb, 2016). Knowledge about common, but limiting, cognitive barriers can help explain why consumers choose to engage in unhealthy, harmful or unsustainable practices, despite being aware of their

consequences (Del Chiappa et al., 2016). For instance, consider individuals who choose to smoke despite the large amount of evidence that confirm its long-term impact on health. Classic policy approaches aim to educate individuals as a means of inspiring behavioural changes. Scholars and experts in the field promote behavioural science as a complementary tool to be employed alongside classic models of economic thought and reasoning.

In the realm of tourism, behavioural science remains relatively underutilised. Tourism decisions such as willingness to book thrilling excursions, ordering habits at restaurants, choice of destination, mode of transport and length of stay can all, in part, be explained by human conditions relating to emotions, risk aversion, social status and norms, motivations and intentions, and other behavioural and social factors (Li et al., 2022). For example, a study conducted by Siamionava et al. (2018) sought to understand the effects of hotel room colours on guests' perception and overall satisfaction of their stay. By using virtual reality technology, the researchers found red rooms and blue rooms elicited different emotional responses and received different satisfaction ratings. Behavioural insights can be of particular interest to the tourism ecosystem as it can be used to understand how tourists' behaviours shift from when they are home versus when they are away, as well as offer an evidence-based framework to better establish the needs and expectations of visitors and design tailored products and services that align with behavioural data (Nikolova, 2021).[1] By combining insights that help identify travel-related attitudes and behaviours and evidence-based research on behavioural approaches that encourage pro-environment decision-making, behavioural science serves as a vital tool in the agenda towards sustainable tourism.

Thus, despite governments' efforts and initiatives to address the challenge of high carbon emissions stemming from the tourism and related sectors (see Box 2.1. Government initiatives to reduce carbon emissions in the tourism sector), and tourists' increasing awareness of sustainability and their demand for more sustainable tourism goods and services, these efforts alone are not enough to transform the tourism sector more sustainable. The carbon emissions originating from practices of the tourism and tourism-related sectors are ultimately linked to human behaviours and decision-making. Insights from behavioural and cognitive sciences have revealed humans systematically deviate from the assumption of utility-maximising human behaviour in economic theory and social sciences in general. To address the challenge of transforming tourism more sustainable, it is therefore paramount to develop and gain better insights about common biases and cognitive barriers that influence decision-making, in order to encourage sustainable behaviours in the tourism ecosystem.

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[1] For more about behavioural optimisation in the tourism system, see https://behavior-smart.com/.

Box 2.1. Government initiatives to reduce carbon emissions in the tourism sector

There are a number of government initiatives that seek to integrate sustainability into the business of tourism by using sector-specific initiatives and incentives. The following provides a sample of international best practices of successful government initiatives that contribute to climate actions through tourism-sector activities.

Malta's SUNx programme: The Ministry of Tourism in Malta launched a partnership with the Government of Malta's Strong Universal Network (SUNx) to develop a **diploma programme for climate-friendly travel to enhance carbon literacy and capacity among the future generation of travel ambassadors and entrepreneurs.**

New Zealand's Tourism Carbon Challenge: In an effort to meet reduce carbon emissions by 2030, the Tourism Industry Aotearoa association introduced a **carbon challenge that encourages tourism companies and related businesses to measure and monitor their carbon footprint** through a unified system of indicators and measures, reinforced by the Tourism Sustainability Commitment and Qualmark – two sustainability assurance programmes available to the tourism community.

France's Accommodation Sustainability Classification: In April 2022, France updated its **accommodation classification system to include a wider range of sustainability standards**. The changes increase the number of sustainability criteria for hotels from 13 to 27 and include new standards relating to waste management, energy, and water consumption, and the use and promotion of local supply chains and ecological and fair-trade products by the accommodation. Importantly, new criteria have been established to encourage hotels and accommodations to increase staff and visitor's awareness of sustainable choices, such as low emission transportation and energy-saving practices.

Slovenia's Green Supply Chains Project: In 2015, Slovenia's capital city of Ljubljana introduced the **Green Supply Chain Project to combat challenges preventing local suppliers of tourism from purchasing locally produced goods**. Integral to this was the launch of a centralised online platform that simplified the process of local hotels and restaurants procuring and offering local products. The programme has proven successful in boosting the local economy, enhancing the quality of products offered by local hotels and restaurants, and promoting pro-environmental business practices among the local tourism community.

Source: Atout France. (2022). La démarche de classement. La Démarche de Classement - Atout France. https://www.classement.atout-france.fr/la-demarche-de-classement; SUNx Malta. (2021). Sustainable Development & Climate Resilience for Travel & Tourism | The SUNx Program (thesunprogram.com); Tourism Industry Aotearoa. (2022). Tourism industry challenge to cut carbon. https://www.tia.org.nz//news-and-updates/industry-news/tourism-industry-challenge-to-cut-carbon/?1; UNWTO. (2017). Tourism for Development – Volume II: Good Practices. 2, 116. https://doi.org/DOI: 10.18111/9789284419746; Green Supply Chains, 2015. Green Supply Chains » Visit Ljubljana.

3 Behavioural Science for Sustainable Tourism

General behavioural factors influencing sustainable behaviours in tourism

Various behaviours and choices along a tourist's journey can contribute to making tourism more economically and environmentally sustainable. Typically, a tourist's journey can be broken down to pre-trip, on-site, and post-trip experiences (Wattanacharoensil and La-ornual, 2019). Even before embarking on a trip, a tourist has to make decisions such as where to travel, what type of accommodation to stay in, and which mode of transport to choose to get to the destination, each of which involve more or less sustainable alternatives. Having arrived at the destination, tourists have been proven to tend to behave less eco-friendly during a vacation, than at home, despite intentions to behave so (Dolnicar, 2020). Some common behavioural barriers that steer individuals away from behaving sustainably are present bias, intention-action gap, having different identities during a vacation than at home, and social norms. This list is non-exhaustive and in addition to these cognitive biases, other more context-specific biases may shape the way tourists behave and the choices they make on their journey.

Making environmentally sustainable choices entails being aware and taking into account the short- and long-term economic and environmental consequences of one's actions and decisions. Yet a common cognitive bias related to sustainable decision-making is present bias, entailing tourists being more impatient when making trade-offs in the present moment, than trade-offs that will materialise further in the future (Chabris et al., 2017). As tourists typically tend to seek pleasure while on a vacation (Dolnicar, 2020), the implications of present bias are highly important in the context of sustainable tourism, which often involves trade-offs between minimising environmental impacts and convenience, yet the two do not need to be mutually exclusive. Challenging the implications of present bias for sustainable choices could entail helping individuals to forgo immediate pleasure and convenience for more sustainable options for instance by encouraging drinking water from the tap instead of using plastic water bottles, reminding to take the exact amount of food that one can eat in a buffet instead of having to throw any away, or encouraging tourists to reuse their towels instead of asking for a new one when not necessarily needed.

The intention-action gap entails that despite people behave environmentally consciously at home, while on vacation, they engage in behaviours that are not aligned with their intentions to behave sustainably (Juvan and Dolnicar, 2014). Explanations for this gap have been given by identity (Hibbert et al., 2013), socioeconomic factors such as income level and education, and by altruism and feelings of moral obligation (Holmes et al., 2021; Juvan and Dolnicar, 2016, Dolnicar, 2010). The occurrence of this gap can also depend on whether a destination is urban or in the countryside. In a study by Line et al. (2018), tourists in nature-based destinations were more likely to participate in sustainability programmes when asked, whereas tourists in urban destinations were more likely to participate when offered a financial incentive.

Additionally, overconfidence bias, which refers to individuals' tendency to overestimate their ability or judgement, can cause individuals to uncompromisingly believe everything will go as planned. This mindset may be more common among tourists who adopt a care-free mentality while travelling, but also serves to help explain the attitudes of individuals who underestimate the consequences of climate change, believing that their behaviours or choices contribute insignificantly to climate change. As another example, confirmation bias occurs when individuals actively seek out information that aligns with their existing

beliefs. This preference for information that is familiar and confirming may contribute to 'culture shock', whereby tourists struggle to adjust to new social and cultural norms, which can result in lower satisfaction with the overall travel experience (Wattanacharoensil and La-ornual, 2019).

Another explanation for behaviours and choices deviating from intentions to eco-friendly behaviour is that tourists tend to adopt new identities while being on a vacation. In a study by Hibbert et al. (2013), tourists were found to perform certain identities over others to for example strengthen and nurture relationships with those important to oneself. For some tourists, travelling opened to the possibility of trying out new identities to become closer to whom they wish to become. These new identities could in some cases influence travel behaviours to the point that they could override intentions to behave in an environmentally sustainable way.

Lastly, social norms have been found to have a significant influence on individuals' tendency to adopt eco-friendly behaviours. Social norms refer to unwritten social rules that steer us to behave according to what is acceptable in a given social situation (Bicchieri et al., 2014). Several studies have tested the effect of social norms on steering individuals towards more sustainable behaviours within tourism (Cialdini et al., 1990) and energy conservation (Alcott, 2011) with results indicating that appealing to social norms can significantly reduce non-eco-friendly behaviours. In the realm of sustainable tourism, social norms have been found to be efficient for example in encouraging tourists to reuse their towels (Cialdini et al., 1990). In addition to these common biases affecting sustainable behaviours within tourism, there are other behavioural and cognitive tendencies that can affect individuals' behaviours and actions in the tourism sector, both on the demand and supply side of the tourism ecosystem.

The supply and demand side of the tourism ecosystem

Behavioural science is concerned with individuals' behaviours. Similarly to tourists, the demand side of the tourism ecosystem, the supply side of tourism consisting of tourism businesses and service providers are also ultimately run by individuals. (OECD 2017a, 2019). Leveraging behaviours and cognitive biases is thus equally relevant for both the demand and supply side in the tourism ecosystem. Traditional policy instruments used to address inefficient market outcomes arising from externalities (for instance in the form of high GHG emissions) include regulations and financial incentives such as taxes, which aim to change the level of production or consumption in order to reach an efficient market outcome (Congdon et al., 2011). The responsiveness of the various actors to traditional policy instruments have been found to depend on the attitudes, beliefs and other cognitive factors that influence individuals' behaviours and decision-making on both the supply and demand side.

Among other things, individuals' responses to financial incentives such as taxes can be influenced by cognitive factors such as limited attention and computational capacity (Congdon et al., 2009). Bradley and Feldman (2020) demonstrated that more salient information about tax-inclusive prices significantly reduced demand, revenues, and the distribution of a tax incidence. Even if faced with the correct prices and incentives to adjust consumption and production of tourism, behavioural economics suggests that individuals can still engage in inefficient levels of economic activity, due to bounded self-control (the failure to act according to one's intentions). By better understanding what the exact reasons are why people fail to act optimally, behavioural science can serve to support the uptake of both demand and supply side policies.

To advance the green transition of the tourism sector, tourism providers can apply insights from behavioural science to guide visitors' behaviours, but also their employees' and managers' behaviours. The behavioural and cognitive sciences can help transform individuals' habits and practices towards more sustainable behaviours. But suitable strategies are highly context dependent. The supply side of the tourism ecosystem refers to both those goods and service providers who are not directly in contact with the visitors, but also to providers who supply inputs to industries directly dealing with the visitors (OECD,

2022), such as hotels, to passenger services such as air, railway, road, and water transport providers, food and beverage services as well as to cultural services including for instance national heritage sites, museums, and many more (OECD, 2022). Just like tourists, individuals who run these supply-side businesses are also making choices and performing behaviours that influence the sustainability of the tourism ecosystem.

Box 3.1. Financial incentives for sustainable habits

Research suggests that government policy and direct action is the most effective way to encourage responsible tourism in short-term (Del Chiappa et al., 2016; Leslie, 2012). This often includes bans on industry practices, establishing eco-labelling, and setting industry-specific sustainable nomenclatures and standards, but also includes **financial incentives**, such as taxation or tax deductions. Financial incentives can be an effective means for inducing behavioural changes on the supply-side by altering the decision-making processes of related decision-makers. By leveraging monetary interventions that increase the costs of unsustainable choices and reduce the cost of eco-innovation, financial incentives are an easy, effective, and commonly used method for encouraging desired outcomes in both suppliers and consumers (Del Chiappa et al., 2016; Mair and Bergin-Seers, 2010).

Under the EU New Green Deal, the European Commission has introduced green taxation as a means of mitigating climate change in EU and member states (European Commission, 2022). This taxation targets high-polluting sectors such as energy, transportation, and tourism specifically. Such measures are often complemented by additional financial incentives designed to encourage eco-conscious practices by discounting sustainable practices rather than deterring harmful ones. This may include funding and grant schemes that set out to finance green projects and services such as the European Commission's Innovation Fund, targeting large and small-scale projects adopting innovation for low-carbon technologies.

Despite the widespread use of monetary incentives to drive behavioural change, some behavioural research raises concerns about the long-term effects of such measures, especially when targeting individuals' behaviours. Some behavioural research indicates that measures that introduce extrinsic rewards may undermine intrinsic motivations and creativity under a variety of conditions for those intrinsically motivated (for example, see Benabou and Tirole, 2003, Gerhart and Fang, 2014; Ma et al., 2014; Promberger and Marteau, 2013). Crucial for reinforcing the development of long-term sustainable habits is ensuring that interventions are designed to preserve and encourage individuals' sense of responsibility to the planet when making decisions in business, at home and abroad. By priming either suppliers or consumers to expect financial compensation in exchange for adopting responsible behaviour, policy makers and businesses risk eliminating the intrinsic motivation to adopt sustainable habits when monetary incentives are unavailable. As such, increasing educational provisions and ensuring beneficiaries understand the impact of their decisions is key for reinforcing non-financial interests to complement monetary rewards or incentives.

Source: Brühl, V. (2021). Green Finance in Europe – Strategy, Regulation and Instruments. Intereconomics, 2021(6), 323–330; Del Chiappa, G., Grappi, S., and Romani, S. (2016). Attitudes Toward Responsible Tourism and Behavioral Change to Practice it: A Demand-Side Perspective in the Context of Italy. Journal of Quality Assurance in Hospitality & Tourism, 17(2), 191–208; European Commission. (2022). Green Taxation. https://taxation-customs.ec.europa.eu/green-taxation-0_en; Leslie, D. (2012). The Consumers of Tourism. In Responsible Tourism: Concepts, Theory and Practice. CAB International; Mair, J., and Bergin-Seers, S. (2010). The Effect of Interventions on the Environmental Behaviour of Australian Motel Guests. Tourism and Hospitality Research, 10. https://doi.org/10.1057/thr.2010.9

Adopting behavioural approaches can thus be effective for both supply and demand-side measures. Supply-side measures can include initiatives that aim to reduce the carbon emissions and ecologic impact of suppliers of tourism through sector-specific policy measures or initiatives that oversee the practices and missions of the suppliers' business processes (see Box 2.1. Government initiatives to reduce carbon emissions in the tourism sector). This may include policies or incentives that target specific tourism-related sectors, such as imposing quotas that limit production of exports of certain goods and services or introducing or

removing subsidies. It could also include more specific initiatives encouraging the implementation of practical measures such as installing water-efficient taps and showerheads or energy-efficient air-conditioning or heating units, or programmes aimed at enhancing tourism employees' awareness and engagement in sustainable behaviours. Supply-side initiatives can have a trickle-down effect on tourists, as consumers are affected by what is available on the market.

By contrast, demand-side measures target the behaviours of tourists and can be introduced by governments through measures such as carbon taxes or renewable energy incentives, or by producers of tourism, such as tour companies, restaurants, and accommodations with the aim of increasing sustainable habits among visitors. These may be in the form of measures that reduce visitors' plastic or food waste, for example.

Several studies have been conducted to understand what attitudes and behaviours contribute to sustainability within tourism businesses. A study conducted in Australia indicated tourism businesses being more committed to sustainability than other businesses, which could at least in part be explained by the tourism sector's ability to adapt and learn fast (Moyle et al., 2018). Factors linked to pro-environmental behaviours among small tourism providers in Greece were among other things the belief that one can control resources and overcome challenges, the awareness of the environmental challenge, the importance of environment to them, and how they view their ability and role in protecting it as well as the support offered by the society (Kornilaki et al., 2019).

Managers' attitudes towards sustainability have also been found to be an important predictor of sustainable behaviour (Santos et al., 2021; Koch et al., 2020). A study by Koch et al. (2020) investigated what drives sustainable behaviour among tourism accommodation providers in Germany. The findings suggest a relationship between sustainability attitudes among managers and sustainable practices among tourism providers, but only when these practices were perceived as beneficial for the firm (Koch et al., 2020). Another study conducted in the field of sustainable entrepreneurship emphasised the positive association between a positive attitude towards sustainability, social norms, perceived attractiveness and sustainable entrepreneurship (Koe et al., 2014).

Box 3.2. Case study: Pilot testing for fuel-efficient practices

Air travel and transportation remain one of the top global polluting sectors making it an obvious and critical target for eco-innovations. Virgin Atlantic's Fuel Efficiency team sought to explore energy-saving tactics by testing opportunities to increase the fuel efficiency of flights. RCTs were conducted on pilots to test the effects of behaviourally informed measures on the fuel efficiency of approximately 42,000 flights. The tested behavioural interventions included: **personalised targets** and reports outlining the impact of pilots' flying habits in relation to environmental impact; **social norms** that compared the results between pilots' flying history; and **incentives** whereby donations were made on the behalf of pilots who reached their targets to the charity of their choice.

The results of the pilot test were significant in shifting behaviours towards fuel-efficient habits. Over the course of the 8-month study, participating pilots saved 21 million kilograms of CO_2 and 6.8 million kilograms of fuel, amounting to savings of $5.37 million USD in costs (Gosnell et al., 2016). By leveraging knowledge about human behaviour and using this to inform strategies directly targeting employees of the supply side in the travel sector, this high-emitting company was able to reduce its carbon footprint, save on costs, and educate employees about the environmental implications of their behaviours. As shown in the graph below, all the study groups improved compared to the pre-experiment time period. This could be explained by the Hawthorne effect, i.e., the change in behaviours because of being monitored.

The transportation sector represents one among many that serve as a useful example for the necessity of coordinated approaches to achieve climate objectives. The climate challenges associated with the transportation and aviation are beyond the remit of tourism policy, but undoubtedly remain a key aspect of the development of sustainable tourism both internationally and at national levels. This serves to underscore the importance of adopting an inclusive approach to climate problem identification, as well as designing solutions that involve the relevant stakeholders, in developing comprehensive and cross-sectoral measures for sustainable tourism development and management.

Efficient Flight, by time period
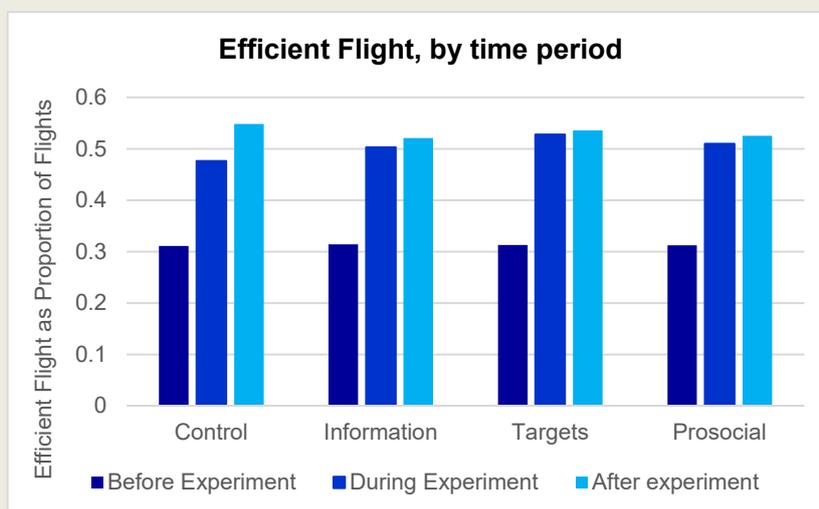
Average attainment of flights deemed to be efficient, capturing pilots' fuel-efficient choices between take-off and landing in the control and treatment groups before, during and after the experiment. Produced by the authors using data from the study.

Source: Nikolova, M. (2021). Best Practices and Approaches Using Behavior-Smart Thinking in 10 Tourism Industry Scenarios (pp. 211–248). https://doi.org/10.1016/B978-0-12-813808-3.00006-X; Gosnell, G. K., List, J. A., and Metcalfe, R. (2016). A New Approach to an Age-Old Problem: Solving Externalities by Incenting Workers Directly (Working Paper No. 22316). National Bureau of Economic Research. https://doi.org/10.3386/w22316.

Various behavioural tendencies influence both the demand and supply sides' uptake of green policies within sustainable tourism. Beyond the traditional policy alternatives such as taxes and regulations, policymakers can additionally address the underlying failures which lead to the negative externalities, or they can support the effect of the traditional policy tools with insights from behavioural science (Agarwal et al., 2023). If a behavioural challenge lies at the source of an externality, a policy may be designed and addressed to correct this behaviour directly (Congdon et al., 2011).

Box 3.3. Case study: Leveraging default choices for food consumption habits

Agriculture is another sector that is among the top contributors to climate change with up to 23% of total global GHGs created by agriculture and land use. Agriculture and livestock production is tied to high levels of GHG emissions, water pollution and scarcity, and harmful practices for biodiversity and land conservation. When empowered and educated about the impact of their decisions, individuals' food consumption can have a significant impact on the planet. For instance, producing 1 kg of beef protein requires 18 times more land, 12 times more fertiliser, 10 times more water and pesticides, and 9 times more fuel than bean-produced protein (González et al., 2020).

In relation to this, a 2021 study used three randomised controlled trials to explore the power of **behaviourally informed defaults** on food choices at catered conferences. Depending on which conference they were invited to, participants received one of the following two messages:

"At the conference a non-vegetarian buffet will be served for lunch. Please state here if you would like to have a vegetarian dish prepared for you."

or

"At the conference a vegetarian buffet will be served for lunch. Please state here if you would like to have a non-vegetarian dish prepared for you."

In modifying the **default** option from a meat to a vegetarian dish, researchers were able to increase voluntary vegetarian choices from 6% from those who received message one, to 87% from those who received message two.

When considering the impact food choices can have on climate change, behavioural insights can be useful in modifying the environment in which individuals make food-related decisions to encourage sustainable and healthy habits. In line with the findings of the study, hotels may choose to reconsider the way vegetarian and non-vegetarian, or sustainable and non-sustainable choices are presented to visitors as a simple yet effective means for encouraging responsible food consumption.

Source: Godfray, H. C. J., Aveyard, P., Garnett, T., Hall, J. W., Key, T. J., Lorimer, J., Pierrehumbert, R. T., Scarborough, P., Springmann, M., and Jebb, S. A. (2018). Meat consumption, health, and the environment. Science, 361(6399), eaam5324. https://doi.org/10.1126/science.aam5324; Hansen, P. G., Schilling, M., and Malthesen, M. S. (2021). Nudging healthy and sustainable food choices: Three randomized controlled field experiments using a vegetarian lunch-default as a normative signal. Journal of Public Health, 43(2), 392–397. https://doi.org/10.1093/pubmed/fdz154.

In order to design more accepted and effective green public policies, behavioural and cognitive sciences can also inform policymakers to identify common cognitive barriers in decision-making (Alfonsi et al., 2022). In practice this could entail gathering more evidence on what cognitive factors and perceptions drive individuals' consumption decisions, and how they perceive intertemporal decisions that involve trade-offs between consumption and its impact on the environment. Evidence shows individuals tend to negatively and strongly react to immediate costs and sacrifices related to consumption, reducing the likelihood of making choices that require patience yet would lead to sustainable consumption behaviour in the long-term (Cornforth, 2009; Hardisty and Weber, 2009). Prompting individuals to consider delayed consumption first and immediate consumption second has been found to decrease intertemporal discounting (Cornforth, 2009; Weber, 2007).

Box 3.4. Behavioural insights for digital technologies for sustainable tourism

Digital technologies are reshaping the way societies navigate the digital and physical world by prompting individuals with unprecedented levels of information and choices. Unsurprisingly, this has profound effects on the tourism sector, as more and more visitors are relying on digital technologies to research, reserve, and recommend their travel experiences. To meet the new demand of tourists seeking to simplify travel processes via digital tools and platforms, many public and private sector tourism providers are creating ways to reinforce sustainable practices while also providing easy, accessible, and mobile-friendly means of planning for and engaging in tourism.

For example, in 2019, the city of Helsinki developed a centralised digital platform to help residents, businesses, and tourists make more responsible and eco-friendly decisions every day. By leveraging insights on **choice architecture**, developers were able to create a user-friendly platform that provides a wide variety of services, tailored to the interests and desires of their users. Not only does it reduce cognitive burden by summarising key information on visually appealing and easy-to-navigate pages, it also reduces frictions for businesses seeking to monitor their carbon footprint by offering a simplified method for voluntarily reporting their impact compared to laborious auditing processes.
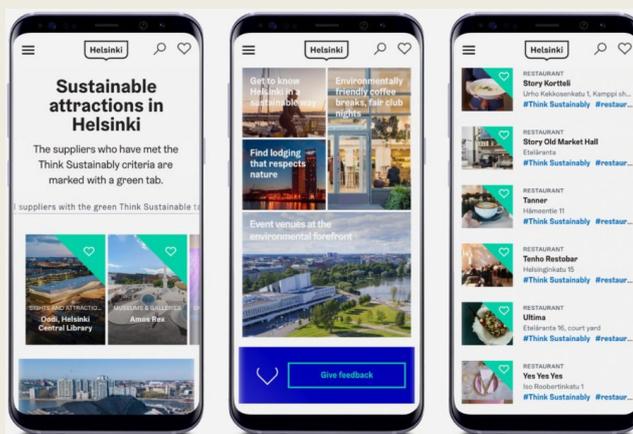
Think Sustainably, My Helsinki

Similarly, the Ministry of Tourism in the Philippines launched its "Keep the Fun Going" campaign to educate and encourage tourists to engage in sustainable habits while visiting. The campaign integrates methods of **behavioural gamification**, which uses challenges, competition, and reward-based incentives to inspire individuals to complete eco-friendly missions, such as the reducing use of single-use plastics, participating in local nature conservation activities, or staying at an eco-friendly accommodation during their visit. By engaging in the various challenges and sharing their experiences online, participants can enjoy engaging in sustainable practices and receive rewards for doing so, while also promoting the local economies connected with their stay, all while actively engaging in eco-friendly behaviours that benefit the local community.

As more digital spaces become available with similar objectives in mind, behavioural science should remain a top consideration in the design and development of digital tourism services. Research relating to the cognitive and social conditions that guide and influence online behaviours can inform governments and tourism providers with the necessary insights into how individuals interact with information in virtual spaces and relatedly, how slight modifications in such spaces can optimise user engagement with sustainable practices, both on and offline.

Source: European Commission. (2019). "Think Sustainably" digital service. "Think Sustainably" Digital Service. https://smart-tourism-capital.ec.europa.eu/news/think-sustainably-digital-service-2019-04-15_en; Helsinki Sustainable City, 2022. https://www.myhelsinki.fi/en/think-sustainably; Philippines Department of Tourism. (2022). DOT launches "Keep the Fun Going" sustainable tourism campaign with gamified challenges. DOT Launches "Keep the Fun Going" Sustainable Tourism Campaign with Gamified Challenges. https://beta.tourism.gov.ph/news_and_updates/dot-launches-keep-the-fun-going-sustainable-tourism-campaign-with-gamified-challenges/

Another means for policymakers to shape the behaviours and choices of tourists or tourism providers is through eco-labels or ecological certifications. Labels and certifications can make more visible and signal to tourists and tourism providers various tourism actors' commitment to sustainability. Gössling and Buckley (2016) identified four factors that can contribute to the success of eco-labels, namely how well tourists understand the information an eco-label aims to convey, whether an individual appreciates the significance of these labels and trusts a label being reliable, and whether an individual knows how to act more sustainably (Gössling and Buckley, 2016). Previous studies have suggested there is potential for eco-labels to signal and profile sustainable tourism providers and make sustainable innovations in destinations more visible (Bučar et al., 2022). A prominent example of a successful eco-label is the Austrian eco-label, which as part of the Tourism2030 platform aims to make sustainable tourism products and services more visible.

Identify drivers and barriers of sustainable behaviours

Tourism policy and services that assume tourists follow conventional decision-making processes risk promoting ineffective services, products and policies targeting tourists. The conditions under which tourists make their decisions is one that can be understood as spontaneous, impulsive and intuitive, and therefore, deviates from those expected from a non-traveller (Smallman and Moore, 2010). Behavioural science challenges the tourism sector to rethink the way we understand tourists' behaviours, motivations, and attitudes when abroad by addressing some of the failures of conventional tourism systems through recognising the unique operations that emerge when individuals shift gears from automatic decision-making reinforced by familiarity and routine, to one of impulse decision-making in a new environment (Smallman and Ryan, 2020). As such, governments, business owners and relevant stakeholders should seek opportunities to apply a behavioural lens to insights generated for and by tourists in order to provide effective, robust and targeted policies, and services.

Understanding the social and contextual conditions that can shift human behaviour is a promising pursuit for tourism research, as individuals often adopt a different mind-set while travelling and with it, another set of priorities and habits. An indifferent traveller, disinterested or disconnected from their surroundings can make harmful decisions that fail to account for the health, diversity and care of the visited area (Västmanland Tourism, 2019). Rather than assuming individuals' decision-making processes are consistent when they take part in tourism activities, tourism policy, and services would likely benefit from a perspective that acknowledges the shift in individuals' behaviours when they engage in tourism activities, as well as the social and contextual factors that give rise to this change. In cultivating this knowledge, governments, decision-makers, and tourism providers can tap into the cognitive and social conditions that influence all aspects of a tourists' journey and develop a more accurate understanding of their targeted audience.

To effectively encourage tourists to behave more sustainably, it is imperative that specific behaviours are accurately identified and targeted, including the underlying conditions that influence the uptake of any given behaviour (OECD, 2019). While tourists may be concerned by their environmental impact when at home – often reinforced by routine where the consequences of their decision-making are more salient in their local context – they may feel less responsible and accountable for these actions in a new environment in which they are visiting for only a short time (Västmanland Tourism, 2019).

For example, littering in a visitor's own neighbourhood can be associated with the undesirable pollution of one's own city. Conversely, visiting a new destination and feeling disconnected from the local community or lacking the necessary information about local customs and norms can cause tourists to believe that they are less responsible and accountable for their choices. A behavioural approach to tourism finds it reasonable to expect individuals to be more aware and conscious of their environmental impact in places they feel connected to.

Segmentation to identify the needs and expectations of sustainable tourists

Behavioural science is also being used to determine how certain behavioural and social conditions can be used to predict the uptake of sustainable practices and behaviours. Cognitive conditions, such as higher degrees of openness, and altruistic, and bio-centric tendencies have been shown to have a stronger association with pro-sustainable practices, while higher levels of egocentric and conservative tendencies are found to be better predictors for traditionally non-sustainable behaviours (Dolnicar, 2020; Mair and Bergin-Seers, 2010; Stern et al., 1995). Such literature indicates the largely unexplored possibilities of employing a behavioural lens to adopt a human-centred perspective based on the intentions and profiles of today's tourists and using these realisations to help inform the design and implementation of tourism policy and services.

Box 3.5. Case study: Market segmentation for identifying the needs of future tourists

The Dutch Government introduced an innovative framework for aligning the common interests of visitors, businesses and residents towards the sustainable development of Dutch tourism. This plan begins by identifying tourists that would have the most positive impact on the Dutch economy and using this to design distinct traveller profiles that reflect the needs of their desired visitors and inform strategies to attract this audience to the country (NBTC, 2019b). By applying a behavioural approach to market segmentation, the Dutch Government can better identify and anticipate the needs of future tourists and provide tourism businesses with a realistic profile of the tourism market. In doing so, the government is able to foster better matches between local offerings and visitors by arming businesses with the knowledge to provide bespoke tourism services and experiences.

Behavioral segmentation for destination Netherlands 2030

✓ Demographics
✓ Lifestyle
✓ Values
✓ Holiday dreams
✓ Spending patterns
✓ Desired experiences
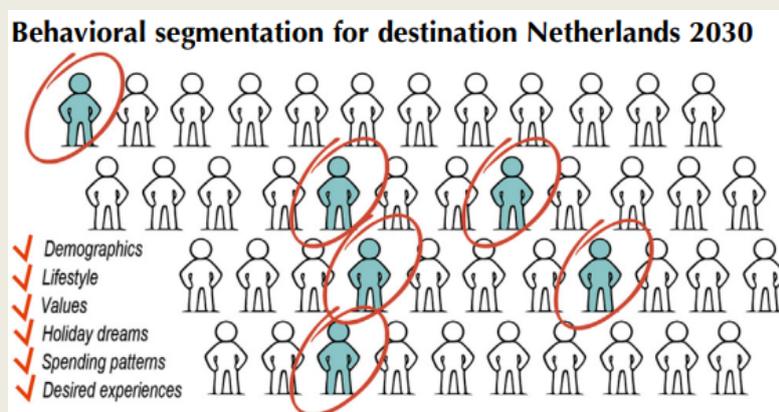
Source: Milena S. Nikolova. "Chapter 6 - Best Practices and Approaches Using Behavior-Smart Thinking in 10 Tourism Industry Scenarios." In Behavioral Economics for Tourism, 211–251. Elsevier Inc, 2021; NBTC. (2019a). Perspective 2030 - Destination the Netherlands. NBTC. (2019b). Passport Postmodern Nora. In Motivation & NBTC Holland Marketing. Amsterdam.

While there is growing recognition among governments and business of the benefits of analysing social and cognitive factors for better understanding tourists' motivations, beliefs, and attitudes, a holistic approach to the way tourists are identified and defined is still required. International tourism marketing and management is often guided by strategies designed to attract individuals from a specific country (Nikolova, 2021). This can be problematic at times, as grouping target audiences by country of origin, for example, can limit efforts to better understand the unique preferences of individuals across a demographic by relying too heavily on generalisations (Nikolova, 2021). Consider the millennial traveller, often regarded as an inclusive, open-minded and tech-savvy generation that represents a different profile of traveller than those

of previous generations – on which much of current travel data rely upon (Richards and Morrill, 2020; Smallman and Ryan, 2020). Behavioural science provides opportunities to analyse the preferences of millennial travellers and identify commonalities and differences among this group, which could serve to enhance tourism-related services, products, policies, and communications.

Efforts to develop tourism data can be improved by applying behavioural methods that generate a richer understanding of tourists' preferences and behaviours. Performing multivariate analyses inclusive of common socio-economic indicators such as marital status, education level, gender, as well as cognitive factors, such as eco-centric versus ego-centric attitudes, trust in institutions and the scientific community, and sense of responsibility to community and future generations, will serve to deepen our understanding of the post-pandemic tourist (Alfonsi et al., 2022). However, collecting and maintaining this level of data is difficult without conducting targeted studies, and can therefore be difficult to integrate this level of data in large-scale analyses.

Segmentation is particularly useful in identifying those tourists most likely to engage in sustainable habits. For instance, research suggests that young tourists tend to be the most adaptable when travelling to a foreign destination and therefore, more willing to engage in eco-friendly travel (Del Chiappa et al., 2016). This can be partially attributed to cognitive factors such as higher levels of open-mindedness in youth compared to adults. Expanding the basis upon which tourism data is generated to be inclusive of social and cognitive considerations provides avenues for establishing empirical links between travellers, unrestricted by traditional socio-economic indicators (Dolnicar, 2020; Mair and Bergin-Seers, 2010).

Box 3.6. Case study: Revitalising domestic tourism in Australia with choice-setting

In an attempt to better understand the shift in expectations and motivations of Australians engaging in domestic tourism, the Australian Trade and Investment Commission partnered with the Behavioural Economics Team of Australia (BETA) to perform behavioural analyses to generate insights on domestic tourists and use this to shape the way domestic tourism services and experiences are designed and promoted among Australians.

One promising avenue being encouraged among tourist providers is to create fresh travel itineraries that appeal to tourists' need for adventure following restrictive containment measures during the pandemic. For example, the Penrith City Council has introduced two new itinerary offerings: one for active families and one for adventure-seeking families. By doing so, Penrith can promote itself as a desirable destination to those most likely to enjoy the unique offerings of that city.

Choice-setting is a behavioural approach that leverages individuals' desire to simplify complicated decision-making processes. By identifying the desired audience and setting choices that appeal to that audience, tourism providers can reduce the cognitive burden often felt by planners of tourism. Choice-setting techniques can be effective at promoting sustainable choices among tourists by making sustainable choices more salient among prospective visitors and by making it easier for visitors to pursue sustainable options by providing a choice set that includes sustainable options.

Source: Australian Trade and Investment Commission. (2022). Maintaining momentum for domestic tourism. Insights. https://www.austrade.gov.au/news/insights/insight-maintaining-momentum-for-domestic-tourism.

Similar approaches can be made for profiling environmentally conscious tourists and designing offerings, communications and campaigns tailored to this demographic, reflective of the expectations of those seeking to engage in sustainable tourism. The following is one of the Netherlands Board of Tourism Council profiles for example: *Paul – An upper-class, middle-aged husband and father of two young adults. Paul prioritises making family memories, a healthy lifestyle, and environmentally-sustainable choices* (NBTC,

2019a). By identifying some of the common socio-demographic characteristics, preferences and behaviours of Paul-like tourists, governments and related agencies can develop campaigns and strategies designed to increase awareness of sustainable decision making among this group. This can optimise when and how they deliver communications, whether targeting visitors, locals, entrepreneurs, and business owners, or their employees (Sardianou et al., 2016).

The effect of what, how and when sustainability information is presented

Human behaviour and decision-making processes are heavily dependent on what and how information is presented to an individual. Understanding tourists' behaviours must involve a richer understanding of what information is available to visitors, at what point of their journey they engage with that information, how it is presented, and most importantly, how it affects or influences the decision-making of visitors. Integral to a tourist's impression and satisfaction of their trip is the memories and connections they create during their visits – which can be significantly influenced by what information is available to them and when. The notion of using behavioural insights to enhance communications is not a new idea; however, advancements in behavioural research are providing innovative ways to engage users and communicate critical information when needed. This has become increasingly challenging, yet critical, in a world where digital media and social platforms are dominating in the attention economy.

Box 3.7. Behavioural insights for tourism information and communications

Borrowing from the social media playbook, more tourism and sustainability campaigns are using **simple, yet effective taglines to promote lasting impressions on the public**. For example, the "Don't move a mussel" campaign was launched in British Columbia, Canada as a way to increase awareness on the ecological harm of invasive mussel species and reduce their movement into British Columbian freshwater. Likewise, Visit Scotland has been using the line, "Scotland: yours to enjoy. Responsibly." to signal their shifting focus on sustainable tourism as well as provide a friendly reminder that tourists still have a responsibility for the protection and preservation of their host destination.

Despite the common use of behaviourally informed messaging, there remain many unexplored opportunities to use behavioural science in the realm of communications. While much of the focus is often placed on identifying who the target audience is and what information needs to be expressed, optimising when and how information is presented is equally critical for ensuring key messages influence their intended audience. Consider the work of Araña and León (2016) who set out to test the impact of **behaviourally informed, time-sensitive interventions**. In this RCT, participants who were booking their travel accommodation were first presented with either no video, a video triggering sadness about climate change, or a video triggering empathy towards future generations. The researchers found that when participants who were prompted with emotionally triggering videos on climate change just prior to accommodation reservation, they were more likely to book a sustainable or eco-friendly option. Through this behavioural experiment, researchers were able to use behavioural science to perform three tasks: (1) identify how certain demographics respond to behavioural interventions; (2) identify an effective point of intervention (when to cue the video); and (3) increase the number of travel packages selected with lower overall CO_2 levels (Araña and León, 2016).

Source: Araña, J. E., and León, C. J. (2016). Are tourists animal spirits? Evidence from a field experiment exploring the use of non-market based interventions advocating sustainable tourism. Journal of Sustainable Tourism, 24(3), 430–445. https://doi.org/10.1080/09669582.2015.1101128; (Okanagan Basin Water Board 2022) Okanagan Basin Water Board. (2022). Don't Move A Mussel | Spread The Message Not The Mussel. Don't Move A Mussel. https://dontmoveamussel.ca; (Visit Scotland 2022); Visit Scotland. (2022). Responsible Visitor Management. http://www.visitscotland.org/news/2021/responsible-visitor-management-campaign.

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4 Insights to Guide Policy Action

The following section is intended to highlight specific actions relating to tourism that can contribute to broader sustainable development objectives and targets. It provides different entry points for infusing behavioural approaches into the tourism policy and business cycle, from scoping targeted audiences, to policy design, to implementation evaluation and assessment. The following insights provide feasible solutions that can be enacted in the short-term to yield short-to-long-term results that complement current strategies for sustainable and resilient recovery.

1. Identify the needs, expectations, and behavioural blockers of today's tourists

Implement behavioural science early to accurately identify, segment and deliver for today and tomorrow's tourists. Much of tourism research and planning still assumes visitors are a rather homogenous group. However, many social and cognitive factors suggest that visitors differ in their attention to sustainable behaviour and in their reactivity to interventions aimed at promoting desired behaviours (Cvelbar et al., 2017). Collecting evidence with experimental and observational methods, which is an integral part of the behaviours insights approach, enable the following:

1. Segmentation performed according to classic socio-economic dimensions, as well as cognitive indicators, such as openness, impulsivity, and risk aversion;

2. Understanding how and to what extent each of these market segments respond to different behavioural interventions, such as default changes, choice-setting, and gamification, as well as behaviourally informed communications relating to sustainable choices and implications;

3. Enhancing matches between visitors and tourism activities based on the preferences, beliefs, attitudes, and habits of today's tourists; and

4. Tailoring strategies and approaches that target specific behaviours with empirically-tested behavioural interventions that drive long-term economic and environmentally sustainable habits.

2. Make tourism human-centred and sustainable by design

Make it easier for tourists to make sustainable choices. Reducing the cognitive burden blocking individuals from pursuing sustainable choices by changing default choices is a complementary, and often more effective measure to educational measures alone. Defaults are among the most powerful behavioural approaches and have proven to be successful in shifting behaviours towards sustainable practices (Pichert and Katsikopoulos, 2008). As Box 6 shows, default settings can be an effective tool in promoting sustainable behaviour by making it the easiest option to pursue. Making lower-emission transport the default option in tour packages, reducing the standard number of towels offered by a resort, or setting the room temperature closer to the seasonal temperature are all simple ways to leverage behavioural insights to reduce the environmental harms caused by tourism.

Simplify and categorise available tourism and sustainable options. Travel preparations can be a strenuous undertaking when considering the coordination, planning and foresight involved. Confronted with endless options and information, travellers can become quickly overwhelmed by the number of decisions prompted by tourism. Services that synthesise useful travel information can help reduce much of the cognitive and time burden endured by the modern traveller, which is why tour companies remain highly valued among tourists. However, in response to the growing number of visitors turning to their devices to plan their travel, more businesses and SMEs should consider the ways their services and products would benefit from a behavioural perspective.

Understanding the visitor's journey by applying a behavioural perspective can identify some of the common areas of visitor dissatisfaction. Streamlined services aimed at simplifying choice-making can enhance visitors' overall satisfaction and help in connecting and boosting the various SMEs and businesses that compose a local tourism ecosystem. More importantly, such services can be designed to promote sustainable choices among tourists by categorising and recommending choices as such. For example, flight metasearch sites such as Kayak and Google Flights now recommend flights with the lowest CO_2 emissions, allow users to choose "low emissions only" flights, and include the total CO_2 emissions in flight options (Kayak, 2021; Pruitt-Young, 2021). In doing so, users are able to sort through the abundance of flight options while prompted to also consider the carbon emissions resulting from their decisions.

Similar behavioural techniques can be useful in targeting the sustainable practices of tourism providers. When seeking to increase awareness of sustainable practices among employees and visitors, businesses may choose to present tiered targets or objectives that break down the actions required to achieve a significant outcome. For instance, rather than expect individuals to make significant changes in their habits immediately, tourism management may consider presenting preferred behaviours according to water, energy, and waste, further categorised by individual target setting and group-level target setting. By infusing gamification tactics, such as voluntary monitoring, competition and prizes, businesses can increase employee and visitor enjoyment in engaging in sustainable practices while also encouraging cost savings and environmentally friendly practices.

3. Enhance communications on green tourism with evidence from behavioural science

Enhance delivery and content of tourism-related information. Educating individuals on the impact of their choices can be an effective means of increasing sustainable habits; however, failure to introduce educational and informational provisions at the time of decision-making often results in suboptimal outcomes. Providing real-time interventions that prompt tourism actors towards more responsible and conscious decision-making can optimise outcomes and reinforce sustainable habits. This begins by identifying the appropriate audience, identifying the information that needs to be communicated, and designing communications that optimise delivery and salience of this information – all of which can be accomplished using behavioural methods.

Promote the benefits of sustainable choices. Behavioural science indicates that individuals react more strongly to losses than to gains while also preferring lower immediate gains rather than later higher returns, regardless of income or age (Ruggeri et al., 2022). Tourism challenges these tendencies by asking visitors to pay upfront to experience the payoff of their future travel. Understanding the impact of time delays and perceived losses and incorporating this into tourism services and products is key for meeting traveller expectations and obtaining satisfaction, while also increasing sustainable practices. For example, Etihad Airways has introduced incentives into their loyalty programme in an effort to advance on its ambitions of becoming net zero emissions by 2050. The airline provides members with a variety of benefits for choosing sustainable options both when flying and not, such as reducing the use of high-emitting transport or

investing in energy-efficient appliances at home. In doing do, Etihad Airways provides members with immediate rewards for choosing sustainable options and then later reinforces those choices when those rewards can be used to access additional services, products and upgrades (Etihad Airways, 2021).

With this in mind, suppliers of tourism may consider listing the benefits of the sustainable option at the time of decision-making, and then reinforcing these choices at the time of enjoyment with similar or related communications. For this, it is important to consider which benefits are most important to the customer and clearly presenting those benefits at the time of reservation, payment, and engagement.

4. Leverage behavioural science for the supply and demand side of the tourism ecosystem

Support demand and supply side policies with insights from behavioural and cognitive sciences. Traditional policy tools such as taxes and regulations are not enough to transform tourism greener. By identifying behaviours that contribute to unsustainable practices within tourism and analysing the drivers and barriers of these behaviours, policymakers and tourism providers can adjust their policies and practices to guide and encourage visitors and employees, as well as managers, to engage in more sustainable behaviours. Identifying these behavioural elements will enable designing strategies to change the behaviours that impede progress towards sustainability objectives. The next step entails testing interventions to determine which successfully prompt a behaviour change in practice (OECD, 2019).

5. Broaden indicators of sustainability used to monitor progress

Expand indicators of sustainability. As the idea and scope of sustainability continues to evolve, so too will the way it and its indicators are defined and measured. Using insights about individuals' awareness, attitudes, and engagement with sustainable tourism should be a key consideration in the way businesses, governments, and relevant stakeholders monitor and assess sustainable performance in the sector. Behavioural indicators can help data collecting agencies accurately capture the changes in tourism-related attitudes and preferences caused by the pandemic, to support the objectives of green transition.

Enhance the quality and accessibility of sustainable tourism data. Key for coordinating efforts towards sustainable development and transition is ensuring timely and accurate data is retrieved to develop a robust and accurate assessment of how tourism and related sectors contribute directly to climate change. Current green transition and environmental goals rely heavily on businesses' willingness and ability to monitor and report their sustainable practices – which vary in methodology, indicator, and measurement. Behavioural interventions, such as those already mentioned (i.e., defaults, choice-setting, gamification, problem framing, etc.) can be used to increase the frequency at which businesses perform voluntary monitoring and quality assurance of data and data collection relating to their sustainable practices. This also provides opportunities to explore how different service providers respond to different behavioural approaches. This data can then be used to generate valuable insights to inform policies designed to target different actors within the tourism ecosystem.

5 Next Steps

Innovative approaches to meeting public sector challenges are often sought when there is an urgent need for creative responses. The need for sustainable tourism is indeed an urgent one – inviting opportunities to infuse a human-centred perspective into both the design and implementation of COVID-19 national recovery plans.

Behavioural science provides an innovative tool to reinforcing sustainable tourism by providing key empirical data on travel behaviour, leveraging knowledge about human behaviour to facilitate sustainable tourism decision-making, and generating human-centred services and polices tailored and targeted to their intended audience. The Strategic Tourism Plan of Italy for the period 2023-2027 (Ministero del Turismo della Repubblica Italiana, 2023) is a leading example of how behavioural science can be included in the foundations of national recovery and resilience plans.

The case studies included in this paper demonstrate the success of behavioural interventions in encouraging pro-environmental behaviours. However, caution should be paid in immediately implementing interventions tested in a different environment and on a different population – particularly in countries and contexts with minimal behavioural data. Limited familiarity and research into the applications and ethics of behavioural science can result in suboptimal or even harmful outcomes. As such, concerted efforts must be made to understand the unique social and contextual factors that can influence the effects of a behavioural intervention.

Replication of pre-tested behavioural experimentation by following a similar protocol as the first experiment, consistent with a solution-oriented approach, is a promising starting point for practitioners who are new to applying behavioural science by offering the opportunity to learn from the experiences of other behavioural experts working in government. In addition to enhancing scientific rigor, replication is critical for determining whether an intervention is best suited for the environment and audience it is intended to serve; otherwise, implementers, whether public or private sector actors, risk scaling ineffective measures. By replicating behavioural interventions within the tourism context, governments, decision-makers, and concerned businesses can better identify the unique aspects of the tourism ecosystem and use this knowledge to design tailored tourism policy, products and services.

There are two common pathways for arriving at the point of scaling interventions – a problem-oriented approach and a solution-oriented approach. A problem-oriented approach indicates a problem is diagnosed and behavioural solutions, designed to address a specific challenge, are tested and assessed. Conversely, a solution-oriented approach is one that seeks to implement previously tested and successful interventions. Both approaches have their own demands, differing in the required skill sets and expertise of those implementing the intervention, as well as the data available, and desired outcomes of the behavioural measure.

Generating context-specific behavioural knowledge can then be used to enhance many functions across the tourism sector, including in the design of novel interventions designed in response to the needs of the tourism sector, but also in uncovering sectoral or regional synergies by broadening the scope of tourism data that is gathered and assessed. Engaging in behavioural experimentation, whether novel or replicated, will be crucial in broadening collective knowledge on post-COVID trends in tourism, as it will contribute to existing knowledge on tourism behaviours and inform a modernised assessment and strategy for the future of tourism in a recovering economy.

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