

# **Pro-Sustainable Consumer Behaviour in Tourism and Hospitality: Drivers, Barriers, and Effective Behavioural Intervention Design**

Marie Nowak

Main supervisor: Maria Lexhagen

Co-supervisor: Tobias Heldt

Faculty of Human Sciences, Department of Economics, Geography, Law  
and Tourism

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# Pro-Sustainable Consumer Behaviour in Tourism and Hospitality: Drivers, Barriers, and Effective Behavioural Intervention Design

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Faculty of Human Sciences

Mid Sweden University, Kunskapens väg 8, 831 25 Östersund, Sweden

Phone: +46 (0)10 142 80 00

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To my family



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# Abstract

Amid escalating global sustainability challenges, tourism and hospitality (T&H) has emerged as an important arena for understanding and fostering pro-sustainable consumer behaviour. The hedonic priorities and complexity of decision-making in T&H often exacerbate the gap between stated attitudes and actual pro-sustainable behaviour, which contributes to issues like climate change. However, these contexts also offer opportunities to better understand and influence pro-sustainable behaviour through tailored interventions.

Behavioural interventions like nudges have shown promise in terms of guiding behaviour towards desirable outcomes by modifying decision-making environments based on behavioural economics. However, gaps remain with regard to understanding pro-sustainable behaviours across diverse T&H settings and developing effective interventions that T&H providers can implement to enhance informed consumer choices without compromising their experience.

This thesis addresses these gaps by using a mixed-method field experimental approach to study pro-sustainable behaviour in two distinct T&H contexts: donations for mountain-biking trails in Rörbäcksnäs, Dalarna (Sweden), and climate-friendly food choices in restaurants in the Swedish locations of Sälen, Dalarna, and Stockholm. Each setting involved two field experiments – testing social norms and carbon label interventions – which together constitute four independent papers. This field experimental approach not only provides insights into real-life behavioural processes but also incorporates providers' perspectives on promoting pro-

sustainable options, informing the design of context-relevant interventions.

The findings culminate in a framework that researchers, providers, and policymakers can use to design and test behavioural interventions that foster pro-sustainable consumer behaviour in T&H and other out-of-home consumption domains. Methodologically, this framework emphasises the importance of collaborative design and iterative adaptation of interventions based on field experiments, to effectively bridge theory and practice in T&H sustainability.

Theoretically, the research offers new insights into pro-sustainable consumer behaviour, highlighting the significant influence of social norms and contextual factors across diverse T&H settings. Practically, the study stresses the need to align interventions with the context-specific goals of consumer segments, showcasing the value of tailored social norm interventions, carbon labels, and staff engagement in promoting pro-sustainable choices while preserving the overall consumer experience.

## Summary in Swedish

Mitt i eskalerande globala hållbarhetsutmaningar har turism- och besöksnäring (T&H – tourism and hospitality) framstått som en viktig arena för att förstå och främja hållbart konsumentbeteende.

Hedonistiska prioriteringar och komplexiteten i beslutsfattande inom T&H förvärrar ofta klyftan mellan uttalade attityder och faktiskt miljövänligt beteende, vilket bidrar till klimatförändringar. Men dessa sammanhang erbjuder också möjligheter att bättre förstå och påverka miljövänligt beteende genom skraddarsydda insatser. Med utgångspunkt i beteendekonometri har interventioner som nudging visat sig lovande när det gäller att styra beteendet mot önskvärda resultat genom att modifiera de miljöer där beslut fattas. Det kvarstår dock luckor när det gäller att förstå miljövänligt beteenden i olika T&H-miljöer och att utveckla effektiva interventioner som T&H-aktörer kan implementera för att påverka konsumenterna att göra informerade val utan att de behöver kompromissa med sin upplevelse. Den här avhandlingen tar upp dessa luckor genom att använda ett mixed-method experimentellt tillvägagångssätt för att studera miljömässigt beteende i två distinkta T&H-sammanhang: donationer till mountainbikeleder i Rörbäcksnäs, Dalarna (Sverige), och klimatvänliga matval på restaurang vid två platser i Sverige; Sälen och Stockholm. Fällexperiment inom två områden genomfördes – testning av sociala normer och koldioxidmärkningsinterventioner – vilka tillsammans resulterade i fyra oberoende artiklar. Detta tillvägagångssätt genom fällexperiment ger inte bara insikter i verkliga beteendeprocesser utan inkluderar också leverantörers perspektiv för att kunna främja hållbara alternativ, vilket var en viktig faktor för utformningen av de kontextrelevanta

interventionerna. Resultaten sammanfattas i ett ramverk som kan användas av forskare, leverantörer och beslutsfattare för att designa och testa beteendebaserade interventioner för att främja hållbart konsumentbeteende inom både T&H och andra konsumentval utanför hemmet. Metodologiskt understryker ramverket vikten av kollaborativ design och en iterativ anpassning av interventioner baserade på fältexperiment, för att överbrygga teori och praktik för hållbarhet inom T&H. Teoretiskt ger forskningen nya insikter i miljövänligt konsumentbeteende, vilket belyser det avgörande inflytandet sociala normer och kontextuella faktorer har i olika typer av T&H-miljöer. För praktiska tillämpningar betonas behovet av att anpassa interventioner till kontextspecifika mål för olika segment av konsumenter. Detta visar på värdet av skräddarsydda interventioner baserade på sociala normer, koldioxidmärkning samt vikten av personalens engagemang vid design av interventioner för att främja konsumenters miljömässigt hållbara val med bibehållen konsumentupplevelse.

# List of Papers

**Paper 1:** Nowak, M., & Heldt, T. (2023). Financing recreational trails through donations: Testing behavioural theory in mountain biking context. *Journal of Outdoor Recreation and Tourism*, 42, 100603. <https://doi.org/10.1016/j.jort.2022.100603>

**Paper 2:** Nowak, M., Alnyme, O., & Heldt, T. (2023). Testing the effectiveness of increased frequency of norm-nudges in encouraging sustainable tourist behaviour: A field experiment using actual and self-reported behavioural data. *Journal of Sustainable Tourism*, 32(7), 1-25. <https://doi.org/10.1080/09669582.2023.2220979>

**Paper 3:** Nowak, M., Heldt, T., Lexhagen, M., & Nordström, J. (2024). Co-designing carbon label interventions in restaurants: Insights from a Field Experiment in a Tourism Destination. *Scandinavian Journal of Tourism and Hospitality Management*, 1-26. [10.1080/15022250.2024.2427776](https://doi.org/10.1080/15022250.2024.2427776)

**Paper 4:** Nowak, M. Influencing Pro-Environmental Dining in Restaurants: A Field Experiment on Endorsed Environmental Messages. (*Manuscript*)

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# Important Terminology Used in This Research

Term	Definition	Supporting Literature	Extended definition (p.)
Pro-sustainable behaviour	<p>Synonymous with pro-sustainable consumer behaviour.</p> <p>Behaviour that facilitates sustainable use of common resources by contributing to positive impacts or reducing negative impacts on these resources.</p>	Juvan & Dolnicar, 2016; Li et al., 2023; Olya et al., 2023; Salinero et al., 2022	p.42
Pro-environmental behaviour (PEB)	Behaviour aimed at minimising the negative impacts or maximising the positive impacts of human actions on the natural environment.	Budovska et al., 2020; Dolnicar et al., 2019; Goldstein et al., 2008; Knežević Cvelbar et al., 2017	p.41
Tourism and Hospitality (T&H) providers	Those making tourism and hospitality services and products available for consumption in commercial settings (hotels, restaurants, etc.) and non-commercial settings (such as managing recreational trails in nature areas).		p. 36
Behavioural economics	Combines insights from economics, psychology, and cognitive science to study how individuals make	Kao & Velupillai, 2015; Lehner et al., 2016; Li et al., 2022;	p.61

	decisions in diverse real-life contexts, often deviating from the predictions of rational choice.	Nikolova, 2021; Samson, 2014	
Behavioural insights	The application of behavioural science to design interventions for real-world problems.	Organisation for Economic Co-operation and Development (OECD), 2023	p.61
Behavioural interventions	Interventions that are informed by behavioural economics, conceptualised in this thesis as those that (a) easily frame the best options, (b) allow individuals to freely choose what they prefer, and (c) are grounded in behavioural science to either block heuristics, trigger heuristics, or inform.	Souza-Neto et al., 2022	p.66
Hard policy interventions	Regulatory or financial measures that restrict choice or alter financial incentives to enforce behaviour change, such as laws, taxes, fees, and subsidies.	Banerjee et al., 2021; Testa et al., 2018	p.57-58
Traditional soft policy interventions	Voluntary initiatives, guidelines, or campaigns to encourage behaviour change; e.g., educational campaigns, social marketing.	Banerjee et al., 2021; Testa et al., 2018	p.59-60

# 1 Introduction

The tourism and hospitality (T&H) sector presents a paradox. On one hand, it stands as a beacon of growth, prosperity, and cultural exchange, driving development and sustaining livelihoods worldwide (International Finance Corporation, 2017; World Travel & Tourism Council, 2022). On the other hand, T&H activities can generate significant social and environmental costs (Nisa et al., 2017; Souza-Neto et al., 2022). The diverse consumption activities associated with T&H, ranging from commercial settings like hotels and restaurants to non-commercial settings like recreational nature areas, contribute to sustainability challenges on both local and global scales, such as infrastructure strains, unequal socio-economic benefit distribution, environmental degradation, and climate change (Buckley, 2012; Gössling, et al., 2011; Lenzen et al., 2018). These impacts also compromise the quality and quantity of T&H provision, posing risks to its long-term viability (Hall, 2016).

Therefore, T&H consumption plays a critical role in some of society's most pressing sustainability challenges and in advancing the United Nations' Sustainable Development Goals (SDGs), particularly Goal 12, which advocates for sustainable consumption and production to ensure robust economies while minimising environmental harm (Dolnicar, 2023; Dolnicar & Demeter, 2023; United Nation World Tourism Organisation [UNWTO], 2017). Although academia, industry, and policy have directed increasing attention to T&H sustainability, mitigation strategies have often been fragmented and achieved insufficient success (Lenzen et al., 2018), partly due to the broad and difficult-to-measure nature of sustainability goals (Sharpley, 2000; Souza-Neto et al., 2022). There are various approaches to addressing sustainability at different scales, including

government policy, management practices, technological innovation, and educational programs; each approach reflects different belief systems and research traditions and has its own advantages and challenges (Hall, 2016; Saarinen, 2006).

Traditionally, academia and practitioners have focused on government-led hard policies that mandate behavioural and industry changes to tackle sustainability issues (Barr et al., 2011; Saarinen, 2006). International agreements, such as the Paris Agreement 2015 (United Nations Framework Convention on Climate Change, 2016) and the UN SDGs (UNWTO, 2017), have been instrumental in shaping macro-scale regulatory changes; however, progress has been limited, as indicated by the continuing environmental degradation and socio-economic disparities (Alonso-Muñoz et al., 2023; Dolnicar, 2023; Hall, 2016; Lane, 2009).

At the meso-level, T&H providers are central to advancing sustainability goals by offering products and services in commercial settings (such as restaurants) and managing common resources in non-commercialised settings (for example, managing trails in public nature areas) (Testa et al., 2018). While operational measures, such as innovations, technologies, and management practices to mitigate environmental impacts have been in focus, providers also act as important 'gatekeepers', shaping the choices and experiences available to consumers and how these are communicated, thereby enabling or hindering pro-sustainable behaviour (Dolnicar, 2020; Kim et al., 2017; Ruhanen et al., 2015). Nevertheless, challenges such as a lack of leadership and resources, competitiveness, and limited consumer knowledge continue to hinder the implementation of effective sustainability initiatives.

Recognising that the success of governmental and industry initiatives is inherently linked to consumer behaviour, recent academic and policy focus has shifted to behaviour change at the individual level (Budeanu, 2007; Dolnicar, 2020; Greene et al., 2023; Souza-Neto et al., 2022; Viglia & Dolnicar, 2020), including in Sweden (Mont et al., 2014; Organisation for Economic Co-operation and Development [OECD], 2017). Most individuals can make consumption choices that are comparatively better for the environment and society than less sustainable alternatives (Juvan & Dolnicar, 2016; Osbaldiston & Schott, 2011). These behaviours – often termed pro-environmental behaviour (PEB), environmentally friendly behaviour, and green behaviour (Budovska et al., 2020; Dolnicar et al., 2019; Knežević Cvelbar et al., 2017; Line et al., 2018; López-Sánchez & Pulido-Fernández, 2016), or, more broadly, pro-sustainable behaviour (Li et al., 2023; Olya et al., 2023; Salinero et al., 2022) – facilitate the sustainable use of common resources by contributing to positive impacts or reducing negative ones.

In T&H, consumers can reduce their negative sustainability impacts in various ways, such as travelling domestically, selecting socially and environmentally responsible providers, or making pro-sustainable choices during vacations, regarding aspects like food, water, and energy consumption, and supporting the local economy (Juvan & Dolnicar, 2017). However, despite widespread awareness of sustainability issues, only a small percentage of individuals make concerted efforts to consume less or differently, especially in T&H settings (Barr et al., 2010; Juvan & Dolnicar, 2014b; MacInnes et al., 2022; Mehmetoglu, 2010; Miao & Wei, 2013). Numerous studies have shown that consumers tend to engage in more unsustainable behaviour in T&H contexts than they do at home, including food

waste (Dolnicar et al., 2020; Juvan et al., 2018), not reusing towels at hotels (Budovska et al., 2020; Gössling et al., 2019; MacInnes et al., 2022), or having high water usage (Rodriguez-Sanchez et al., 2020). The resulting gap between attitudes or intentions and actual behaviour is commonly termed the 'attitude-behaviour gap' (Juvan & Dolnicar, 2014b; Souza-Neto et al., 2022).

Traditional soft policy interventions, such as education and awareness campaigns, have proven insufficient for driving significant pro-sustainable behaviour change in T&H (Kollmuss & Agyeman, 2002; Mont et al., 2014). This shortfall has led to the development of a distinct field, intersecting with disciplines like economics, sociology, psychology, marketing, and ethics, to better understand the factors influencing consumption in T&H, along with alternative ways to facilitate behaviour change (Hall, 2016; Li et al., 2022). One key area that is gaining traction within this field is behavioural economics, which integrates insights from economics, psychology, and cognitive science to provide a more realistic understanding of decision-making (Nikolova, 2021; Souza-Neto et al., 2022). Behavioural economics recognises that human behaviour is boundedly rational, context-dependent, and influenced by various cognitive biases, heuristics, social norms, emotions, and other psychological factors (Mont et al., 2014; Samson, 2014).

Behavioural economics can be applied by policymakers and organisations to influence individuals towards more personally and socially beneficial outcomes (Rachlin, 2015; Thaler & Sunstein, 2008). Soft policies informed by behavioural economics, which are often termed behavioural interventions (Dolnicar & Demeter, 2023; Souza-Neto et al., 2023), involve subtle changes in the decision-making environment, using techniques like defaults, placement, or social

norms to frame desirable options without restricting freedom of choice (Hansen & Jespersen, 2013; Noggle, 2018). Different types of behavioural interventions exist based on various research traditions, such as nudges, boosts, thinks, and nudge plus (Banerjee, 2021; Frerichs, 2019; Hertwig, 2017; Hertwig & Grüne-Yanoff, 2017; John, 2011), with nudges being the most commonly referred to (Thaler & Sunstein, 2008). These interventions can be categorised based on the main mechanism they use to influence behaviour, particularly whether they focus on triggering automatic responses (for example, via defaults) or more deliberate decision-making (such as via social norms or carbon labels) (Abrahamse, 2020; Banerjee et al., 2022; Kahneman & Tversky, 1979). The latter are generally seen as more ‘choice-preserving’ interventions and valuable for promoting informed decisions, thereby enhancing the potential for sustained behaviour change (Bruns & Perino, 2021; Osman et al., 2021; Winterstein, 2022).

While hard policies, innovation, and education are essential for addressing urgent, large-scale sustainability challenges like climate change, behavioural interventions are being increasingly adopted alongside these measures to encourage pro-sustainable choices in areas such as transportation, energy use, and recycling (Avineri et al., 2009; Lehner et al., 2016; Mont et al., 2014). Behavioural interventions are valuable tools in contexts where policymakers might avoid controversial measures, such as carbon taxes, to protect their re-election prospects (Willis, 2020). Additionally, they can foster broader societal adaptation and support, especially in areas where other policies are impractical or insufficient (Lehner et al., 2016; Nikolova, 2021).

In T&H, consumers face various decisions such as transport or food choices, many of which are shaped in situ while impacting the natural and social environment and their overall consumption experience (Smallman & Ryan, 2020). This complexity poses challenges to implementing effective policies that promote pro-sustainable behaviour. For example, hard policies on resource consumption may face legal and ideological challenges, as seen in the context of public access rights and nature-based tourism in Nordic Countries (Øian et al., 2018). Restrictive policies, such as bans on certain ingredients or portion sizes in restaurants, might also detract from the consumer experience and affect providers' competitiveness (Acuti et al., 2022; Testa et al., 2018). Moreover, behavioural interventions can be flexibly applied in diverse contexts like destination management, transportation, and restaurants (Benner, 2019; Cozzio et al., 2020; Dolan & Metcalfe, 2013; Souza-Neto et al., 2022), while also generally being cost-effective (Loewenstein et al., 2012; Tyers, 2018), with the potential for cost reductions (Kallbekken & Sælen, 2013).

Designing behavioural interventions in T&H involves certain considerations due to the hedonic and experiential nature of consumption, which typically occurs outside individuals' daily lives and home environments (Barr et al., 2010; Dolnicar, 2020; Juvan & Dolnicar, 2014b). On the one hand, unfamiliarity with new social and physical environments, combined with uncertainties about behavioural outcomes, makes interventions like carbon labels or social norms – designed to help consumers make informed pro-sustainable choices – especially relevant (Smallman & Moore, 2010; Williams & Baláž, 2014). On the other hand, T&H consumers, unlike those in many other contexts, primarily seek pleasurable experiences



from their investments of time and money (Cohen et al., 2014; Juvan & Dolnicar, 2014b). Behavioural change studies have found that this self-focus may diminish concern for the sustainability impacts of choices, suggesting that the most effective interventions are those that target subconscious decision-making or personal enjoyment through material rewards and games (Demeter et al., 2023; Dolnicar et al., 2019, 2020; Dolnicar, 2020).

However, evaluations of interventions in T&H often overlook their potential to enable informed decision-making, generate sustained change, and their impact on consumer experiences and provider reputations (Dolnicar, 2020; Demeter et al., 2023; Greene et al., 2023). Additionally, existing research has predominantly focused on PEBs within commercial hospitality settings, such as towel reuse or food waste, while only a few studies have examined other behaviours (Demeter et al., 2023; Souza-Neto et al., 2022). Yet, the diverse contexts of T&H consumption, ranging from hotels to recreational outdoor areas, each present unique challenges and consumer motives that may conflict with or support pro-sustainable behaviour (Albrecht et al., 2024; Steg et al., 2014a). Therefore, a more nuanced understanding of pro-sustainable behaviour across various T&H settings, including non-commercial contexts and socio-economic-oriented behaviours, is crucial to advance knowledge and design effective, context-relevant interventions.

To achieve this, field experiments – which are notably scarce in T&H research – are invaluable because they enable causal conclusions about how specific drivers, such as awareness, personal norms, or social norms, influence pro-sustainable behaviour in real-world settings (Li et al., 2023; Viglia et al., 2024). Such knowledge is crucial for advancing theory in T&H, providing practical recommendations

for designing interventions that resonate with different consumer segments and operational environments, and ultimately fostering pro-sustainable behaviour (Viglia & Dolnicar, 2020). In particular, greater attention is needed on social norm and carbon label interventions. Despite mixed results in prior research, significant gaps remain in terms of understanding their effectiveness across various contexts and designs (Demeter et al., 2023; Dolnicar, 2020). These interventions are among the few that can be easily implemented with the potential to enable informed choice and generate sustained change (Allcott & Rogers, 2014; Schultz et al., 2007; van der Linden, 2018). Moreover, while T&H providers are important gatekeepers in implementing behavioural interventions, the literature has largely neglected their perspectives in intervention design (Coghlan et al., 2023). It is crucial to gain insights into the drivers and barriers faced by providers in facilitating pro-sustainable behaviour in order to develop mutually beneficial interventions that are adopted long-term.

## 1.1 Research Aim and Research Questions

This thesis studies pro-sustainable consumer behaviour in tourism and hospitality (T&H) settings, drawing insights from tourism and consumer behaviour theory, as well as behavioural economics. The aim is to enhance knowledge of the drivers and barriers to pro-sustainable behaviour in these contexts and offer ways to encourage such behaviour through behavioural interventions.

The main research question guiding this thesis is:

*RQ1: What are the drivers and barriers to pro-sustainable consumer behaviour in tourism and hospitality settings?*

While existing research on behavioural interventions in T&H often focuses on pro-environmental behaviour (Demeter et al., 2023; Dolnicar, 2020; Greene et al., 2023; Souza-Neto et al., 2022), the present thesis broadens the scope to include behaviours related to both social-economic and environmental sustainability dimensions, collectively termed pro-sustainable behaviour. Pro-sustainable behaviour is defined here as behaviour that facilitates the sustainable use of common resources, by enhancing positive impacts or mitigating negative impacts on these resources (Li et al., 2023). The focus is specifically on behaviours enacted during the consumption of products and services at tourism destinations and hospitality establishments, involving touchpoints with both commercial and non-commercial providers.

While the primary focus is on consumer behaviour, it is also essential to examine the drivers and barriers that local T&H providers face in making pro-sustainable choices more accessible and attractive. Gaining insights into their perspective is vital for understanding specific sustainability challenges, identifying relevant interventions for field experiments, and addressing the overarching research question of the thesis. This understanding will also enhance practical contributions to the field. Therefore, the sub-questions for this thesis are:

*RQ2: What are the drivers and barriers for tourism and hospitality providers in making pro-sustainable options more available and attractive to consumers?*

*RQ3: How can behavioural interventions be designed to encourage pro-sustainable consumer behaviours in tourism and hospitality?*

Given the complexities of sustainable tourism and consumer behaviour in diverse settings, this research focuses on two cases in Sweden, each of which presents distinct sustainability challenges and target behaviours. The first case is donations for mountain biking (MTB) trails in Rörbäcksnäs (Dalarna), and the second is climate-friendly food choices in restaurants in Sälen (Dalarna) and Stockholm. In both cases, it is impractical to achieve the desired behaviour change solely through hard policies or educational measures, which highlights the relevance of behavioural interventions. Nevertheless, the cases differ notably in target behaviour and contextual influences.

The first case examines visitor donations for recreational trails in nature areas, which are necessary to bridge the gap between free public access to nature and the economic needs of local non-commercial tourism providers (Heldt, 2005, 2010). The focus is on Rörbäcksnäs, a rural MTB destination in Dalarna, which illustrates how insufficient donation funds can hinder the management of increased trail usage and tourism development. As tourism development is seen as a means of sustaining and revitalising the community's livelihoods – addressing socio-economic and population declines similar to those faced by many rural areas (Hedström & Littke, 2011) – the area seeks to leverage its unique natural resources. By enhancing recreational infrastructure such as MTB trails, Rörbäcksnäs aims to attract visitors, foster local entrepreneurship, create jobs, and stimulate other sectors (Fleckhaus & Heldt, 2022; Øian et al., 2018). Therefore, donation behaviour is a pertinent pro-sustainable behaviour to study, particularly through testing behavioural interventions, such as social norm nudges, to encourage donations in this context.

The second case studies food consumption in T&H settings, which contributes significantly to global greenhouse gas (GHG) emissions. This impact arises primarily from the high volume of meals consumed in establishments like restaurants and hotels (Gössling et al., 2015; Landais et al., 2023). The issue is exacerbated by factors such as the limited availability of climate-friendly meal options and information, as well as the dominance of self-oriented and hedonic motives over environmental concerns in out-of-home dining settings (Claessens et al., 2023; Fechner et al., 2023; Gössling et al., 2011). While hospitality providers play a crucial role in facilitating more climate-friendly choices, consumer acceptance is essential (Gössling et al., 2011; Poore & Nemecek, 2018). This necessitates interventions that effectively guide consumers towards climate-friendly options without compromising their experience and business profitability. The burger and pizza restaurant *Leffe's* at Sälen's Högfjällshotell and the healthy fast-food restaurant *MAHA* in Stockholm were suitable for testing such interventions, specifically carbon labels. These restaurants were selected due to practical reasons such as industry collaboration, serving style, size, and location. Additionally, they offer different food options, customer segments, and management styles, allowing for meaningful comparisons.

In summary, the two cases highlight distinct sustainability challenges within the T&H context in Sweden, each carrying broader implications beyond their immediate scope. By focusing on specific cases, this thesis aims to enhance the depth, relevance, and practical applicability of its findings, thereby providing more comprehensive answers to the research questions. Each case involves two field experiments designed to test theory-informed interventions, with the field experimental approach being a critical aspect of this research

and its contribution. This approach makes it possible to gain a deeper understanding of behavioural processes in real-life settings, rather than merely describing them, and provides relevant practical recommendations to tackle sustainability problems (Viglia & Dolnicar, 2020).

As illustrated in Figure 1, the four field experiments constitute four independent papers. These papers align with the overall thesis aim and research questions and are integrated with the cover essay (in Swedish, and hereafter ‘kappa’) to form this thesis. The kappa synthesises the papers to address the thesis aim, encompassing a shared introduction, literature review and theoretical framework, methodological approach, discussion, and conclusions, as detailed in Section 1.1.1.

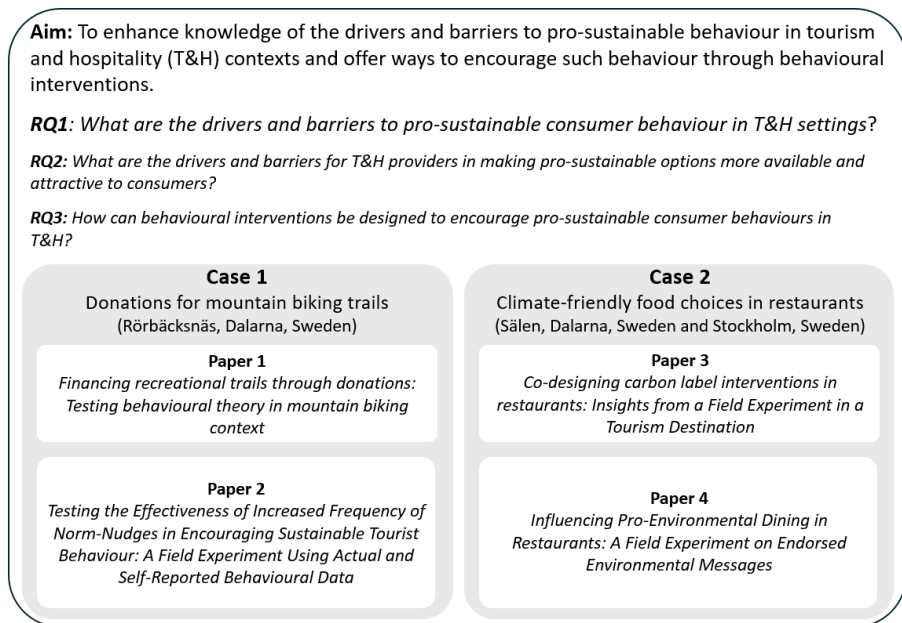


Figure 1: Thesis overview

This thesis makes three key contributions. Firstly, it contributes to knowledge on pro-sustainable behaviour in T&H by (a) applying behavioural theories and concepts that have not been extensively tested in the selected T&H settings and (b) comparing studied behaviours across two distinct cases. Secondly, it tests behavioural interventions for pro-sustainable behaviour in T&H through field-experiments, offering empirical evidence for their effectiveness. Thirdly, it contributes to the understanding of collaborative intervention design and testing by incorporating the perspective of providers. Practically, these findings can help providers and policymakers in T&H and other out-of-home consumption domains develop interventions designed to encourage pro-sustainable behaviour.

### **1.1.1 Thesis Outline**

This thesis is organised into seven chapters. Chapter 1 introduces the research problem, the thesis aim, and the overarching research questions. Chapter 2 discusses the literature and theoretical background, beginning with a review of sustainability and consumer behaviour in T&H. The focus then shifts to behavioural change approaches, particularly behavioural economics and behavioural interventions. The chapter identifies specific knowledge gaps in pro-sustainable behaviour and intervention research in T&H, and then reviews experimental studies on social norm and carbon label interventions, which present the main interventions explored in the individual papers. Chapter 3 discusses key theoretical models and concepts relevant to understanding and changing pro-sustainable behaviour, establishing a framework for studying pro-sustainable behaviour in this thesis. Chapter 4 details the materials and methods used, including my methodological and epistemological positioning

in pragmatism and how this guided the choice of mixed methods and field experiments. This chapter also presents the research design, including qualitative and quantitative methods, and discusses limitations and ethical considerations. Chapter 5 summarises the individual papers that contribute to this thesis. In Chapter 6, the findings are discussed collectively, drawing comparisons between the papers and cases and linking them to the broader literature. This discussion is organised into three sections, each addressing one of the thesis research questions. Finally, Chapter 7 reconciles the discussions and answers the research questions, concluding the thesis with methodological, theoretical, and practical implications. Chapter 7 also highlights the limitations of the thesis and offers suggestions for future research.

## **2 Background**

This chapter presents the theoretical background for this thesis. It begins with a review of sustainability in tourism and hospitality (T&H), including macro-level (the broader tourism system) and meso-level (the providers' perspective) aspects, and their connection to the micro-level, which encompasses consumer behaviour. The focus then shifts to this consumer level, examining tourist behaviour and decision-making, and the attitude-behaviour gap in T&H. Following this, the chapter discusses behavioural change approaches relevant to pro-sustainable consumption in T&H, emphasising behavioural economics and behavioural interventions.

### **2.1 Sustainability in Tourism and Hospitality**

The ideas behind sustainable tourism have a long history, but a comprehensive discussion of the sustainability concept in academia began in the 1960s (Du Pisani, 2006). This development parallels



growing awareness of environmental degradation, resource depletion, and concerns about the long-term viability of economic systems (Lane, 2009; Saarinen, 2018; Swarbrooke, 1999). Essentially, sustainable tourism applies the principles of sustainable development to the T&H sector, aiming to balance economic growth with social and environmental responsibility to ensure the long-term viability of destinations and the industry (Hall & Lew, 1998). The fundamental goal of sustainable tourism is to 'meet the needs of present tourists and host regions while protecting and enhancing opportunities for the future' (Bramwell & Lane, 2011; World Commission on Environment and Development, 1987).

Sustainability is vital for T&H because it relies heavily on the well-being of natural and socio-cultural resources, which are either directly consumed during T&H activities or used by commercial and non-commercial providers to create products and services that enable positive consumer experiences (Fennel & Cooper, 2020). At the same time, consuming resources, such as water and energy, can deplete them and disrupt sociocultural dynamics, affecting local communities and economies (Buckley, 2012; Hughes & Morrison-Saunders, 2018). Thus, the relationship between T&H consumption and natural and socio-cultural resources holds significant importance for their sustained well-being and the long-term viability of the industry.

Despite its aim to reconcile often competing interests across economic, socio-cultural, and ecological dimensions (Fennel & Cooper, 2020), the concept of sustainability faces extensive scrutiny due to its multidimensional nature, conceptual ambiguities, and contradictions (Butler, 1991; Saarinen, 2006; Sharpley 2000). The vagueness of sustainability definitions and the involvement of diverse stakeholders contribute to uncertainty about the meaning and

practical implementation of sustainable tourism, sustainable development, or sustainable tourism development (Duffy, 2002; Liu, 2003; Spangenberg, 2005). This uncertainty is reflected in the broad diversity of sustainability literature within T&H, encompassing various research agendas and methodological approaches.

At the same time, this diversity underscores how sustainability can function as a 'boundary object' – a concept that has been recognised across different fields but interpreted and applied in various ways (Star & Griesemer, 1989). As a boundary object, sustainability provides a common ground for policymakers, practitioners, and academics from diverse fields, despite their differing perspectives. Sustainability is flexible enough to be adapted to local needs while remaining recognisable across different contexts (Favilli et al., 2015). This adaptability highlights the value of the concept's broad yet varied applications, as progress towards sustainability requires collaboration and innovation across multiple dimensions and perspectives (Jones et al., 2016). With this understanding, the following section briefly discusses approaches to advancing sustainability at different levels, highlighting the drivers and challenges associated with broader systemic and industry efforts, and how individual actions are interconnected with larger sustainability goals.

### **2.1.1 Sustainability at the Macro, Meso, and Micro Levels**

T&H sustainability is widely recognised as a systemic issue that requires a comprehensive approach integrating interactions among stakeholders across macro, meso, and micro scales. Researchers have focused on responsibilities, drivers, and barriers at each scale to advance sustainability, highlighting the interdependencies among

broad policy frameworks, industry practices, and consumer behaviours (Dolnicar, 2020; Hall, 2013; Hardy et al., 2002; Hughes & Morrison-Saunders, 2018; Saarinen, 2006; 2019; Sharpley, 2022).

At the macro scale, scholars have emphasised the importance of understanding T&H within the broader context of environmental, socio-cultural, political, and economic structures to develop integrated solutions that transcend individual sectors or local issues (e.g., Higgins-Desbiolles, 2010; McCool et al., 2013; Moscardo, 2021). Such perspectives have conventionally called for structural solutions implemented by governments (Barr, 2008; Barr et al., 2011).

Governmental and intergovernmental organisations have made efforts to mitigate tourism's negative effects while enhancing its benefits (European Commission, 2003; World Tourism Organisation [WTO] & United Nations Environment Programme [UNEP], 2005). Notable among these is the Tourism Agenda 2030, which aligns with the United Nations' broader Sustainability Agenda 2030 and Sustainable Development Goals (SDGs). This framework recognises the role of tourism in contributing to the SDGs, particularly SDG12 'Sustainable consumption and production' (Alonso-Muñoz et al., 2023).

Despite these global efforts, the sector continues to face escalating environmental impacts due to the fragmented application of sustainability goals across different T&H sectors, issues, and geographic locales (Gössling et al., 2023; Moyle et al., 2020; Nunkoo et al., 2021; UNWTO, 2022). The broad and often vague definitions of the SDGs lead to subjective interpretation, which complicates the adoption of clear national or industry-level actions (Jones et al., 2016; Rajani & Boluk, 2022). For example, SDG12 lacks specific guidelines regarding how sustainability can be integrated into consumption and

production while maintaining profitability, which poses a core challenge within the current capitalist framework (Jones et al., 2016).

To address these challenges, there has been considerable research into how meso-level actors, including commercial and non-commercial T&H providers, can effectively implement sustainable practices (e.g., Hardy et al., 2002; Hughes & Morrison-Saunders, 2018; Ruhanen, 2013; Saarinen, 2019). The main sustainability imperative at this level is to maintain natural and socio-cultural resources to continue providing pleasurable consumer experiences for social and economic benefits (Jones et al., 2016). Given that resources are not always owned by commercial providers like hotels or restaurants, a considerable amount of work has focused on community-based or rural tourism development, where residents may be directly involved in T&H provision (Jia et al., 2022; Lee & Jan, 2019; Okazaki, 2008; Pasanchay & Schott, 2021).

From a resident's perspective, tourism development can be a viable path to socioeconomic revitalisation in rural areas by generating jobs, encouraging infrastructure improvements, and preserving local traditions and resources (Paraskevaidis & Andriotis, 2017; Saarinen, 2019; Øian et al., 2018). Nature-based activities have garnered particular policy and research attention in countries like Sweden, reflecting the potential for residents to promote local resources like forests, trails, and the identity of a place, generating shared value for themselves, visitors, and the community (Madanaguli et al., 2023; Porter & Kramer, 2011).

However, using tourism for development in rural areas also presents challenges, including revenue insufficiency, inequitable benefit distribution, environmental impacts, and social costs on residents,

such as disruptions to traditional lifestyles and values (Chuang, 2010; Kaltenborn et al., 2001; Marion et al., 2016). These challenges are exacerbated when increasing visitor numbers and demands put pressure on local resources, potentially necessitating new policy measures to manage tourism. This can create conflicts between stakeholders and the depletion of the very resources that attract visitors (Sandell & Fredman, 2010).

Despite the diverse themes concerning the role of residents and communities in sustainable T&H, most meso-level research has adopted a managerial perspective to understand how sustainability, particularly the environmental dimension, influences business and destination development strategies (Cavalcante et al., 2021; Eckert & Pechlaner, 2019; Pulido-Fernández et al., 2019) and competitiveness (Cucculelli & Goffi, 2016; Iraldo et al., 2017; Sakshi et al., 2020; Streimikiene et al., 2020). Research often focuses on major commercial providers like hotels and airlines and their adoption of technologies and management practices to enhance operational efficiencies (Hall et al., 2016; Jones et al., 2016).

T&H providers are increasingly expected to align their operations with sustainable practices as part of corporate social responsibility (CSR) initiatives. This shift is driven by changing environmental and social regulations, increased sustainability awareness among the public and shareholders, and concerns about the cost and availability of natural resources (Kotler & Lee, 2005; Mak & Chang, 2019). Adopting less socially and environmentally harmful practices and products is now considered not only a differentiation strategy but often a prerequisite in the highly competitive T&H environment (Font & McCabe, 2017; Futtrup & Grunert, 2023; Truong & Hall, 2017; Visser, 2007). Literature and industry experience have highlighted the

various drivers and barriers for businesses and destinations in implementing effective pro-sustainable practices (Iraldo et al., 2017; Leonidou et al., 2013; Madanaguli et al., 2023; Namkung & Jang, 2013; Rhou & Singal, 2020).

While T&H providers are increasingly incorporating sustainability into their marketing strategies in response to public pressure and consumers' stated demand for more sustainable options, CSR and sustainability management face varied interpretations (Falk & Hagsten, 2024; Pollack, 2023). A significant challenge in this context is 'greenwashing' or 'CSR-washing', where businesses deceptively promote themselves as environmentally and socially responsible to attract customers and enhance their public image (Jones et al., 2016). Although many T&H providers publicly commit to sustainability, their efforts often focus on short-term initiatives that offer direct economic benefits through increased efficiencies and reduced operational costs, such as through energy savings (Baloglu et al., 2020; Dolnicar et al., 2019; Hall et al., 2016; Molina-Azorín et al., 2015; Namkung & Jang, 2013). Comprehensive, sustained sustainability practices require committed management and employees, along with adequate resource allocation, as marketing and financial benefits are typically realised only in the medium to long term (George & Frey, 2010; Pender & Sharpley, 2004).

The inadequacy of sustainability initiatives in T&H is further exacerbated by constraints such as a lack of knowledge and skills, regulatory and cultural contexts, financial pressures, and limited resources, especially among small-scale businesses (Bramwell & Lane, 2011; Hall et al., 2016; Leonidou et al., 2013). Another significant concern is the potential compromise of consumer experience when integrating sustainability practices, due to reduced

comfort and convenience or inducing negative emotions like guilt (Font et al., 2017; Sirieix et al., 2017). Promoting such practices can also lead to increased scrutiny and negative customer reactions if there is a perceived lack of credibility and trust. This has led some providers to understate their sustainability efforts; a phenomenon known as 'greenhushing' (Ettinger et al., 2021; Kahle & Gural-Atay, 2014; Kim & Kim, 2014). This reticence hampers the ability of consumers to effectively assess the sustainability impacts of providers and make informed pro-sustainable choices.

However, recent research on service-dominant logic (SDL) and value co-creation suggests that sustainability communication can enhance customer value (Bordian et al., 2024; Font et al., 2021; Trabandt et al., 2024). SDL in the T&H industry defines value co-creation as an interactive process that involves both the providers' interest and the consumer's participation in shaping their experiences (Vargo & Lusch, 2004, 2017). According to this perspective, the value of sustainability in T&H depends not only on the inherent attributes of products or their sustainability certification but also on the behavioural and emotional benefits that the customer experiences, making it individual and context-specific. By aligning sustainability efforts with customer values and highlighting the benefits of sustainable offerings, providers can enhance consumer perceptions, add value to their experiences, and differentiate their products and services in the marketplace (Font et al., 2021; Iraldo et al., 2017; Smith & Colgate, 2007).

In addition to the economic benefits of effective sustainable practices, including enhanced brand perception (Namkung & Jang, 2013), customer loyalty (Kim & Hall, 2020), and financial performance (Llach et al., 2013), adopting environmental initiatives can foster

awareness, knowledge, and sustainable values within T&H operations (Knežević Cvelbar et al., 2022). A small body of literature has explored the role of hospitality employees in environmental business practices (Chou, 2014; Knežević Cvelbar et al., 2022; Pham et al., 2019; Su & Swanson, 2019; Zhang et al., 2021), highlighting that perceived organisational commitment to CSR can positively influence employees' pro-environmental engagement at work (Cantor et al., 2012; Raineri & Paillé, 2016), potentially spilling over to PEB outside of work (Jaich et al., 2022), and enhance their positive emotions, sense of belonging, and involvement in decision-making (Liu et al., 2021). Therefore, ensuring such commitment is crucial for fostering employee engagement and credibly conveying value proposition messages to consumers, thus co-creating sustainability value (Font et al., 2021).

Following the above, T&H providers face unique challenges with regard to adopting sustainable offerings, particularly in balancing the need to maintain high-quality consumer experiences while remaining economically viable (Jones et al., 2016; Moeller et al., 2022).

Recognising that governmental or industry initiatives may have undesirable rebound effects unless consumption behaviour also changes, recent emphasis has shifted towards the role of individual consumers in mitigating sustainability problems (Barr et al., 2011; Dolnicar et al., 2019; Leonidou et al., 2013; Mak & Chang, 2019).

At the micro-level, consumers harm the environment and society through various T&H-related commercial and non-commercial activities, such as excessive energy and water consumption in hotels (Gössling et al. 2019; Warren & Becken, 2017), overindulgent and wasteful food consumption (Dolnicar et al., 2020; Gössling et al., 2011), carbon-intensive transportation (Becken, 2007; Tyers, 2018),



and degradation of natural areas through trampling or littering (Buckley, 2008; Eriksson et al., 2023; Godtman Kling et al., 2017). The cumulative impact of these individual choices contributes significantly to local and global sustainability issues, including strain on local infrastructure and climate change (Lenzen et al., 2018; Scott et al., 2012). This underscores the point that individuals also possess significant agency to reduce their impacts or benefit the environment and society through their consumption choices (UNWTO, 2007).

Terms like 'sustainable', 'responsible', 'ethical', 'pro-social', 'environmentally friendly', 'green', and 'pro-environmental' describe consumption behaviours that entail higher consideration for the environment and society (Dolnicar & Long, 2009; George & Frey, 2010; Johnstone & Lindh, 2017; Juvan & Dolnicar, 2016; Wang et al., 2023; Weeden, 2013; for reviews, see Chandran et al., 2021; López-Sánchez & Pulido-Fernández, 2019). While these terms often overlap and are used interchangeably, many focus primarily on environmental sustainability (e.g., Dolnicar, 2020; Han et al., 2015; Wang et al., 2023). T&H research has largely concentrated on this dimension through pro-environmental behaviour (PEB), which aims to minimise the negative or maximise the positive impacts on the natural environment (Budovska et al., 2020; Dolnicar et al., 2019; Goldstein et al., 2008; Knežević Cvelbar et al., 2017). Less attention has been given to consumer behaviour related to social sustainability (Moscardo & Murphy, 2016), economic sustainability (Sakdiyakorn et al., 2021), or cultural sustainability (Chandran et al., 2021; Iaquinto, 2015; Ji et al., 2023; Salinero et al., 2022).

Non-selfish behaviours oriented towards others or the environment are sometimes collectively termed pro-social behaviour (De Groot & Steg, 2009; Dunfield, 2014; Moscardo & Murphy, 2016). Given the

interconnected nature of environmental and social benefits, and considering that this thesis is concerned with behaviours more related to socio-economic sustainability (donations) and environmental sustainability (food choices), pro-sustainable behaviour is used herein as the overarching term. This encompasses behaviour that facilitates sustainable use of common resources by contributing to positive impacts or reducing negative impacts on these resources. Considering the various influences driving such behaviour and stakeholders involved, pro-sustainable behaviour is locally and temporally defined (Hughes & Morrison-Saunders, 2018).

Although increasing research interest and awareness of sustainability challenges may suggest that consumers seek out and support pro-sustainable options, a growing body of research along with real-life evidence shows that expressed demand often does not match actual behaviour (e.g., Bollani et al., 2019; Dolnicar et al., 2008; Feucht & Zander, 2018). Consumers continue to overuse or misuse resources in T&H, even more so than in other contexts (Juvan & Dolnicar, 2014b; Dolnicar, 2020; Miao & Wei, 2013). Addressing this challenge requires an understanding of the underlying factors that encourage or inhibit pro-sustainable behaviour in T&H (Han, 2021).

## 2.2 Consumer Behaviour in Tourism and Hospitality

Consumer behaviour in T&H has been studied extensively from various sociological, economic, and psychological perspectives (Cohen et al., 2014; Gnoth, 1997; Juvan et al., 2017; Mannell & Iso-Ahola, 1987; McCabe et al., 2016; Sirakaya & Woodside, 2005).

A noteworthy research stream examines consumer behaviour in T&H through a sociological lens, focusing on how social norms,

institutions, and cultural meanings shape tourists' roles and behaviours (Bargeman & Richards, 2020; Ryan, 2002; Swarbrooke, 1999). This perspective is also relevant for understanding pro-sustainable behaviour, particularly through practice theory (e.g., Barr et al., 2010; Cohen et al., 2013; Kantanbacher et al., 2017; Shove & Spurling, 2013; Verbeek & Mommas, 2008). Practice theory views consumption as being embedded within social practices that evolve from and reproduce shared understandings of appropriate behaviour, such as how a hotel guest should act. These practices are further shaped by broader infrastructures, systems of provision, and cultural factors (Coghlan et al., 2023; Gowdy, 2008; Heiskanen & Laakso, 2019; Pedwell, 2017).

While practice-based approaches provide a valuable lens for analysing the deeper roots of behaviour by examining the broader societal context, most consumer behaviour research in T&H is rooted in psychology. The psychological approach interprets behaviour as both 'observable activities and the mental processes resulting from and guiding social life' (Pearce, 2005, p.1) and uses psychological theories to understand how consumers perceive, interpret, and respond to various stimuli in T&H contexts (Han, 2021). This perspective is valuable for identifying and empirically testing specific drivers and barriers to pro-sustainable behaviour, such as attitudes, beliefs, and norms, which is central to this thesis.

Early consumer behaviour models, both general (e.g., Engel et al., 1995; Howard & Sheth, 1969; Lilien & Kotler, 1983) and tourist-specific (Mathieson & Wall, 1982; Moutinho, 1987; Sirakaya & Woodside, 2005; Weeden, 2013), offer insights into various psychological elements of behaviour and typically depict consumers as rational decision-makers, whose decisions progress from attitude

to intention and, ultimately, behaviour (Fishbein, 1963). However, the applicability of mainstream consumer theories to T&H, especially regarding pro-sustainable behaviour, has been extensively questioned (Cohen et al., 2014).

Tourism is distinct from other consumption settings such as retail because the central phase of the consumption process is typically an intangible experience with highly hedonic characteristics (Budeanu, 2007; Cohen et al., 2014; Juvan et al., 2017). While this also applies to other experience contexts, like general restaurants (Edwards, 2013; Fechner et al., 2023), or events (Alba & Williams, 2012; Moura & Hattula, 2024), this distinction is exacerbated by the spatially distant and unfamiliar nature of tourism, which inevitably influences behaviour (Gnoth, 1997; Juvan & Dolnicar, 2014b; Mannell & Iso-Ahola, 1987). Although consumer behaviour theories have developed to account for the specifics of T&H, no single theory can fully explain every consumer behaviour within the vast array of T&H contexts (Weeden, 2013). Nevertheless, the extensive body of theories significantly informs our current understanding of consumer behaviour in T&H, providing a foundation for further exploration (Crouch et al., 2004; Han, 2021).

The following sections draw on tourism and consumer literature to provide insights into the characteristics of tourism consumption and the psychological factors influencing decisions in this context, particularly within the central phase of the consumption process. Given that this topic is broad, I have focused on what are considered the most pertinent concepts related to the research aim. These insights will later form a basis for understanding the relevance of some of the mainstream theories of human behaviour in T&H and for studying the drivers and barriers to pro-sustainable behaviour.

## 2.2.1 Tourist Behaviour

Tourism decision-making processes, choice, and behaviour are intricately connected phenomena that collectively shape individuals' experiences. Extensive research on tourist choice and decision-making has highlighted the inherent complexity of these processes (McCabe et al., 2016; Sirakaya & Woodside 2005). Tourists' decision-making – the cognitive process of choosing between different courses of action – involves many continuously occurring sub-decisions, which culminate in choices ranging from tourism-specific choices, such as selecting a destination, to everyday choices like meals while on holiday (Smallman & Moore, 2010). Influenced by a range of contextual factors such as social influences, information, and infrastructure as well as psychological factors like attitudes, motivations, and perceptions, tourists' choices manifest in different actions, reactions, and interactions; that is, behaviour (McCabe et al., 2016).

The complexity of tourist behaviour (or consuming while being a tourist) is further amplified by the hedonic and unfamiliar elements involved in decision-making as individuals leave and return to their homes, signifying notable psychological, social, and economic distinctions from other consumption behaviours (Cohen et al., 2014; Juvan et al., 2017). Scholars have made numerous attempts to conceptualise the determinants, phases, and influencing factors involved in tourist behaviour, often focusing on specific constructs such as needs, motivations, or values (for reviews, see, e.g., Sirakaya & Woodside, 2005; Smallman & Moore 2010).

Tourist behaviour is commonly considered a response to felt needs, along with constraints, available information, personal preferences, interests, and values (Gnoth, 1997; Middleton & Clarke, 2001; Pearce,

2014). According to Gnoth's (1997) model of tourism motivation and expectation formation, certain needs, such as the need to relax, can be stimulated externally and internally, establishing themselves as urges that organise an individual's thoughts. These urges then stimulate motives, representing the reason behind specific behaviour. Motives also signify goals, such as relaxation, which refers to the desired outcomes or benefits that tourists aim to achieve through their holidays or activities. By way of situational parameters like time and money, motives set the stage for the motivation process, which allows motives to be expressed differently by individuals, such as through different holiday or activity choices. The motivation process includes cognitive elements such as mental representations, knowledge and beliefs, as well as emotions, encompassing drives, feelings, and instincts. Cognitive elements and emotions both play a role in tourists' motivation processes and objectives, influencing the selection of different decision-making strategies in diverse contexts (McCabe et al., 2016). However, there is a distinction in the level of control that tourists exert over them. Like many other tourism scholars (e.g., Hosany & Gilbert, 2010; Goossens, 1998; Malone et al., 2014; Pearce, 2009), Gnoth (1997) emphasised the importance of emotions in holiday tourism, considering its focus on pleasure-seeking.

Following the above, goals and motives are considered dispositions that emerge when stimulated by felt needs or desires, motivating behaviour when connected to the given situation and the individual's value system. These goals and motives act as the primary criteria for expectations when individuals decide to engage in a behaviour, playing a central role in assessing the value of, and satisfaction with, the resulting experience (Holbrook, 1999; Pearce, 1982). Given the

multidimensional and dynamic nature of a tourist's needs, motives, goals, and expectations, the functional and psychological outcomes derived from their experience are also diverse. Holbrook (2006) conceptualised these outcomes as experiential or 'second-order' and perceived values, specifically as 'interactive, relativistic, preference experiences' (p. 715). In this framework, values are seen as subjective and dynamic, dependent on the situation and a person's goals, and multidimensional since one can simultaneously experience various hedonistic, social, aesthetic, or other factors, contributing to a multidimensional experience (Gallarza & Gil, 2008).

While this experiential perspective focuses on perceived value as a dynamic interplay between consumers and their consumption contexts, the importance of these perceived values for individuals lies in their connection to higher-order personal values (Gallarza & Gil, 2008; Rokeach, 1973). Higher-order personal values are understood as positive or negative ideals that serve as guiding principles in people's lives and direct judgments about desirable behavioural outcomes (Passafaro & Vecchione, 2022; Schwartz & Howard, 1981). From a marketing perspective, personal values are commonly explored in connection with product attributes and consumer benefits to understand how consumers translate product features into meaningful outcomes, shedding light on the cognitive processes that underlie decision-making. For instance, the Means-End Hierarchy (Gutman, 1982; Woodruff & Gardial, 1996) conceptualises how consumers link product or service attributes (such as eco-friendly materials) to expected outcomes or benefits, which are, in turn, connected to higher-order values (such as environmental responsibility) (Woodruff, 1997).

Similarly, Gnoth (1997) viewed tourists' higher-order values as chosen behavioural rules to fulfil needs, which are achieved either by adjusting the environment to meet those needs or by adapting oneself to the environment. In tourism, it can be inferred that consumers typically select an environment that aligns with their values and preferences (Gnoth, 1997). Moreover, Crick-Furman and Prentice (2000) proposed a 'contextual and situational nature of values' in the tourism context. According to this view, tourists are not solely directed by their universally held values but also by context-specific values while on holiday. Although this perspective reinforces the contextual influence of tourism on behaviour, personal values, unlike goals, motives, or expectations, are more commonly viewed as relatively stable and transcending situations (Gallarza et al., 2021; Holbrook, 1999).

Although tourism consumption can hold multiple goals at any given time, it is widely accepted that the primary goal is personal enjoyment (Cohen et al., 2014; Juvan & Dolnicar, 2014b; Prebensen et al., 2014). The value derived from personal pleasure in the consumption experiences itself is called 'hedonic experiential value' (Holbrook, 2006). Another common goal for tourists is escapism, which reflects a desire to derive intrinsic value from escaping routine, everyday responsibilities and problems (Krippendorf, 1987; Mannell & Iso-Ahola, 1987). While escapism is often directly linked to hedonism in tourism, there is less support for linkages between hedonism and Holbrook's (2006) other value: ethics (Gallarza et al., 2021). In a consumer context, ethics is often associated with pro-sustainable behaviour, guiding involvement in practices that entail concern for how one's consumption behaviour affects others. However, this does not imply that pro-sustainable behaviour is



solely, or even primarily, driven by ethics. While pro-sustainable behaviour suggests that the behaviour is not performed for personal rewards *per se*, selfish motives can also drive such behaviour. Intrinsic, potentially subconscious motives, such as the desire to experience a 'warm glow', to avoid negative self-evaluation and guilt, the desire for social approval, or even automatic responses may drive such behaviours (del Río-Vázquez et al., 2019; Gallarza et al., 2021; Malone et al., 2014; Saito, 2015).

Nevertheless, the alignment between escapism or hedonic self-oriented motives and ethical ones in tourism has been widely questioned (Dolnicar et al., 2019; Juvan & Dolnicar, 2014b; MacInnes et al., 2022). Some literature, which has focused on transformative tourism experiences, has viewed tourism as an opportunity for 'positive change in attitudes and values' (Christie & Mason, 2003, p. 9). This perspective arises from the notion that tourism involves new encounters facilitating new behaviours, such as pro-environmental behaviours (PEBs) (Wolf et al., 2017) or solidary behaviour (Grabowski et al., 2017; Pung et al., 2020). Notably, such research has predominantly focused on alternative types of tourism, like volunteer tourism, which often involves more sustainability-oriented segments (Coghlan & Gooch, 2011; Coghlan & Weiler, 2018; Malone et al., 2014). Moreover, while transformative tourism experiences hold potential for long-term behavioural changes, research in this field highlights that the impact of transformative triggers varies among individuals and may diminish once they return home (Pung et al., 2020).

More commonly, T&H literature emphasises that selfish motives in tourism tend to override or clash with consumers' ethical concerns for society and the planet, hindering engagement in pro-sustainable

behaviours (Dolnicar et al., 2019; Juvan & Dolnicar, 2014b; MacInnes et al., 2022). Research has increasingly noted a gap between consumers' pro-sustainable behaviour at home as opposed to when on holiday and has offered different reasons for this gap, providing a foundation for a deeper understanding of pro-sustainable behaviour in T&H and identifying potential levers to change.

### **2.2.2 The Attitude–Behaviour Gap**

The 'Attitude–Behaviour Gap', also known as the 'Ethical Purchasing Gap', the 'Value–Action Gap', or the 'Intention–Behaviour Gap' refers to the disconnect between individual's expressed awareness, intention, or concern for the environment and society, and their actual pro-sustainable behaviour. While this gap has been documented across various fields of consumption (Bray et al., 2010; Eckhardt et al., 2010; Nicholls & Lee, 2006; Nieto-Garcia et al., 2024; Tasci et al., 2021) it is particularly pronounced in T&H, where, despite growing awareness and concern for sustainable options, actual consumer behaviours often lag behind stated intentions (Barr et al., 2010; Holmes et al., 2021; Juvan & Dolnicar, 2014b).

Understanding this gap involves examining both the systematic differences among individuals and how engagement in pro-sustainable behaviour varies across contexts (Dolnicar & Grün, 2008).

Research on the attitude–behaviour gap has traditionally focused on identifying socio-demographic and psychographic characteristics that either facilitate or impede different pro-sustainable consumption behaviours (e.g., Dolnicar & Grün, 2008; Dolnicar & Leisch, 2008; Jain & Kaur, 2006; Larson et al., 2019; Mohr et al., 2015; Wang et al., 2019; Verain et al., 2012). A substantial body of research has found that differences in variables, such as age, education, and income level, are influencers of general and T&H-related pro-sustainable behaviours

like public transportation, food waste reduction, sustainable food consumption, or eco-tourism activities (Dimitri & Dettmann, 2012; Dolnicar, 2010; Jain & Kaur, 2006; Mota-Gutierrez et al., 2024; Patel et al., 2017). However, findings related to socio-demographic factors also show considerable ambiguity and conflict (Bray et al., 2010; Dolnicar, 2010; Tasci et al., 2021).

For instance, while education level is often associated with greater knowledge about sustainability issues, it may not significantly predict destination-based pro-sustainable tourist behaviour (Dolnicar, 2010; Moeller et al., 2011) and it influences different behaviours in different ways (Whitmarsh & O'Neil, 2010).

Concerning age, while younger consumers may exhibit high environmental awareness, practical barriers such as cost and convenience often deter them from making pro-environmental choices (Naderi & Steenburg, 2018). Conversely, older segments might engage in more sustainable tourism activities (Dolnicar, 2004; McKercher et al., 2010), even though this could be related to higher discretionary spending and time associated with these activities (Dolnicar, 2010).

Furthermore, inconsistent empirical findings regarding the influence of income level on pro-sustainable consumption suggest that it is often linked to the financial cost of the behaviour (Balderjahn et al., 2018; Juvan & Dolnicar, 2017; Moeller et al., 2011; Pedrini & Ferri, 2014). While consumers tend to patronise pro-sustainable offerings like environmentally friendly accommodation or food, they are often unwilling to pay more for them (Bhaskaran et al., 2006; Bollani et al., 2019; Manaktola & Jauhari, 2007; Pulido-Fernández & López-Sánchez, 2016). Thus, while socio-demographic variables provide some insights into potential mediating or moderating factors, they are not,

by themselves, able to fully explain the attitude–behaviour gap in T&H.

Given the variability in pro-sustainable behaviour among different socio-demographic segments (Juvan & Dolnicar, 2017), researchers have increasingly turned to psychographic variables for a more comprehensive understanding. Survey studies have identified several psychological constructs influencing general and tourism-related pro-sustainable behaviours, particularly PEBs, such as problem awareness, internal attribution, social norms, guilt, perceived behavioural control, attitudes, moral norms, and intentions (Bamberg & Möser, 2007; Hines et al., 1987; Osbaldiston & Schott, 2011; Song et al., 2023). The importance of values (e.g., Gao et al., 2016; Hedlund et al., 2012; Passafiore & Vecchione, 2022; Schultz et al., 2005), personality variables (Balderjahn, 1988; Harland et al., 2014; Shackelford, 2006), and self-identity processes (Clayton & Opatow, 2003; Whitmarsh & O'Neill, 2010), has also been emphasised, although their relevance varies across PEBs.

Overall, segmentation studies indicate that different consumer segments exhibit varied inclinations towards pro-sustainable choices, despite widespread sustainability awareness (Dolnicar & Leisch, 2008; Dolnicar, 2010). However, the plethora of psychological constructs and their often-varying influence also underscore the complexity of understanding pro-sustainable behaviour and suggest the influence of further, situational, factors. By concentrating mostly on intentions at the pre-consumption stage using self-reported behaviour through surveys (Tasci et al., 2021; Verain et al., 2012), segmentation studies are prone to recall and social desirability bias and lack the necessary context to provide a more comprehensive

understanding of the attitude–behaviour gap (Cerri et al., 2019; Webb & Sheeran, 2006).

Recognising these limitations, there has been a pivotal shift in research toward exploring contextual factors that may encourage or hinder pro-sustainable behaviour (Barr et al., 2010; Mehmetoglu, 2010). Although research on cross-contextual spillover of pro-sustainable behaviours is still emerging, existing studies demonstrate that individuals' behaviour can vary significantly depending on the context, despite their general dispositions (Holmes et al., 2021; Juvan & Dolnicar, 2014b; Xu et al., 2020). This variability underscores the need for advocates of pro-sustainable consumption in T&H to not only target different segments but also understand and integrate contextual factors when aiming to change behaviour.

#### 2.2.2.1 The Attitude–Behaviour Gap in Tourism and Hospitality

Although the distinct characteristics of tourism contexts were recognised early (Crompton, 1979; Gnoth 1997; Mannell & Iso-Ahola, 1987), studies on the attitude–behaviour gap only emerged within sustainable tourism literature in the 1990s (Kollmuss & Agyeman, 2002; Watkins, 1994). One of the earliest studies to address this issue was conducted by Watkins (1994), who examined US travellers' attitudes towards accommodation providers implementing environmental strategies. The study revealed that around three-quarters of participants considered themselves sustainable consumers, but only around half considered themselves sustainable travellers, suggesting that 'Environmental consciousness hasn't taken hold as strongly in travel as in other activities' (Watkins, 1994, p.70). Similarly, Wearing et al.'s (2002) study on international backpackers in Australia concluded that the relationship between environmental

awareness, intention, and behaviour 'becomes even more fragile once the tourist leaves his or her home country' (p.144).

Subsequent research has provided consistent evidence for the attitude–behaviour gap in sustainable tourism, primarily concerning PEBs (Barr et al., 2010; Holmes et al., 2021; Juvan & Dolnicar, 2014b; Kollmuss & Agyeman, 2002; Miao & Wei, 2013; Miller et al., 2015). For example, Miao and Wei's (2013) survey study of US citizens found that participants displayed more PEB in private lifestyle and household activities than in hotel settings. Barr et al. (2011) found support for these findings in a UK study that showed that participants seemingly committed to PEB at home struggled to transfer these behaviours to tourism contexts. Similarly, Juvan and Dolnicar's (2014) interview study found that even tourists who engaged in environmentalism at home and were aware of the negative environmental impacts of tourism participated in environmentally harmful tourism activities. Further studies, such as those by Miller et al. (2015), confirmed that PEBs, including green food consumption, tend to decline when people are on holiday compared to when they are at home. Schrems and Upham (2020) also highlighted this gap in the context of academic air travel among sustainability scientists who, despite believing that scientists should lead by example, still averaged several flights yearly.

The evidence strongly suggests that individuals exhibit significantly more PEBs at home compared to a holiday context, underscoring the gap between environmental awareness, attitude, or intention and actual behaviour. In response to these findings, researchers have delved deeper into understanding the various factors that drive or hinder pro-sustainable behaviour in T&H, aiming to identify those contributing to the attitude–behaviour gap (e.g., Barr et al., 2010;

Dodds & Holmes, 2023; Juvan & Dolnicar, 2014b; Holmes et al., 2021; Ropret Homar & Knežević Cvelbar, 2023; Tölkes, 2020). Numerous possible reasons for this gap have been identified, as detailed by Juvan and Dolnicar (2021, p. 2). These reasons include: perceptions that there are no behavioural alternatives and that other societal or environmental issues are more important (Becken & Hay, 2007); considering holidays as a time for relaxation and escape from everyday responsibilities (Barr et al., 2010; Wearing et al., 2002); lack of information required to make sustainable vacation choices (Juvan & Dolnicar, 2014a); inconvenience or a lack of infrastructure while on holiday (Baker et al., 2014; Wearing et al., 2002); carbon offsets or trading off PEB at home with less environmentally friendly holiday behaviour (Becken & Hay, 2007); trusting in technological solutions to solve environmental problems (Gössling et al., 2009); emphasising the positive socio-economic benefits of tourism (Becken & Hay, 2007); externalising the impacts of behaviour and deflecting responsibility (Barr et al., 2010; Dolnicar et al., 2019; Gössling et al., 2009; Jackson et al., 1996); and arguing that individual behaviour is insignificant in view of overall challenges (Gössling et al., 2009; Juvan & Dolnicar, 2021).

These stated reasons generally link to individual dispositions (such as laziness), responsibility (for example, a lack of trust), and practicality (such as a lack of money and information) (Blake, 1999; Dolnicar et al., 2010; Grilli & Curtis, 2021), with a strong emphasis on the distinct context of tourism consumption. Most reasons are associated with self-oriented motives, such as enjoyment and escape, conflicting with sustainability actions, as well as a perceived lack of personal responsibility and control as a tourist. In line with the emphasis on positive emotions over cognitive elements in tourists' decision-

making processes (Gnoth, 1997), this finding suggests that the hedonic and liminal nature of tourism contexts, being outside people's usual environments and social norms, makes them less inclined to engage in conscious, compromising behavioural changes. Similar attitude–behaviour gaps have been noted in out-of-home dining settings, such as cafés and restaurants, where consumers tend to indulge in less sustainable options (such as meat) than they do in a home context (Biermann & Rau, 2020; Horgan et al., 2019). While consumers may express a preference for products that benefit the environment (Miller, 2018), they are often reluctant to compromise on comfort and enjoyment in exceptional out-of-home contexts and may be less familiar with the consequences of their behaviour, particularly as tourists (Baker et al., 2014).

A noteworthy limitation in research on the attitude–behaviour gap in T&H is the reliance on self-reported behaviour or intentions, sometimes gathered through interviews or focus groups (Barr et al., 2010; Juvan & Dolnicar, 2014) and often through surveys (Holmes et al., 2021; Juvan & Dolnicar, 2021; Mehmetoglu, 2010; Xu et al. 2020) rather than measurements of actual behaviour. Although comparing people's attitudes and actual behaviour at home to holidays presents methodological challenges, this reliance on self-reporting can introduce social desirability and selection bias, with people who are more interested in sustainability being more likely to participate (Cerri et al., 2019; Viglia et al., 2024). Moreover, surveys on the attitude–behaviour gap lack nuanced consideration of the specific T&H context, especially with most research relating to PEBs in hotels, which raises questions about the applicability of findings to different T&H settings and behaviours (Nieto-García et al., 2024). Nevertheless, the substantial evidence of the attitude–behaviour gap



indicates that pro-sustainable choices are generally not being made salient, appealing, or relevant enough to consumers within T&H contexts.

Before discussing the psychological theories and models that may explain some of the stated reasons behind this gap, the following sections examine behavioural change approaches to pro-sustainable behaviour in general consumption contexts and their applicability in T&H. After providing a broad overview of hard and soft policy approaches, I focus on behavioural interventions, including the different types therein and their relevance to pro-sustainable behaviour in T&H, specifically in the context of this thesis.

## 2.3 Approaches to Promote Pro-Sustainable Behaviour

Different behavioural change approaches can be employed to promote pro-sustainable consumer behaviour. Each approach is based on distinct assumptions about the factors that influence behaviour, both in general and specifically within the context of T&H (Grilli & Curtis, 2019; Hall, 2013). Broadly, these approaches can be divided into hard policies, which aim to enforce behaviour change through regulatory or financial interventions, and soft policies, which encompass voluntary initiatives, guidelines, or campaigns to encourage behaviour change (Lynn & Oldenquist, 1986; Testa et al., 2018).

In the early stages of research on behavioural change in sustainable T&H, there was a strong focus on hard policies (Hall, 2013). These policies are based on the standard economic understanding of rational choice, which posits that individuals make decisions based on known and consistent preferences and with a full understanding

of available options to maximise their utility, considering factors like pleasure and financial gain (Mertens et al., 2021; Neumann & Morgenstern, 2007; Sinclair & Stabler, 1997). Accordingly, this perspective assumes that individuals act primarily in their self-interest, which can lead to overuse or misuse of resources because individuals derive higher personal utility from 'free-riding', even though cooperation could benefit everyone (Bimonte, 2008). To incentivise individuals to opt for more sustainable alternatives, hard policies make undesirable choices more expensive and less convenient; for instance, through carbon taxes on products with high greenhouse gas emissions or mandatory entrance fees to natural areas (Hall, 2013).

While hard policies are powerful tools for inducing behaviour change among consumers, and rational choice assumptions still influence much of the research on pro-sustainable behaviour (Li et al., 2023), these policies and assumptions have limitations in terms of fully understanding pro-sustainable behaviour and addressing complex sustainability challenges in T&H on their own (Acuti et al., 2022; Bimonte, 2008, 2016). These limitations include practical, legal, and ideological challenges. For example, in countries like Sweden, the right of public access prevents the enforcement of entrance fees for natural areas (Kaltenborn et al., 2001). Hard policies might also unevenly burden specific groups like residents, fail to differentiate between those already practising pro-sustainable behaviours and those who are not, and risk resistance or backlash if long-term benefits are not clearly communicated (Bimonte, 2008, 2013). Furthermore, these interventions can reduce competitiveness for destinations or T&H providers by increasing costs or limiting consumer choices. Thus, while hard policies are essential in some

sustainability areas, particularly where voluntary actions alone are insufficient to mitigate urgent challenges, it is critical to recognise their limitations in order to develop comprehensive sets of strategies that encourage pro-sustainable behavioural change in different settings.

Soft policies are typically more flexible, targeting voluntary behaviour change, and can encourage individuals to readily adopt the behaviours prescribed by hard policies or even surpass their objectives (Osman & Nelson, 2019; Testa et al., 2018). These policies involve a variety of tools such as education, social, marketing and nudging, as discussed further in the following section. However, research in T&H has conventionally underscored the importance of raising awareness and educating consumers and the industry about the environmental impacts of their activities to promote pro-sustainable behaviour (Hall, 2016; Moscardo, 1998; Packer & Ballantyne, 2013; WTO & UNEP, 2005). This traditional soft policy approach draws on cognitive behavioural models like the Theory of Planned Behaviour (Ajzen, 1985), which are essentially also rooted in rational choice, suggesting that individuals engage in deliberate decision-making processes, based on reflection of personal beliefs, values, attitudes, and norms. Accordingly, traditional soft policy interventions aim to make the long-term consequences of behaviour more visible through educational efforts, intending to shift attitudes and intentions towards pro-sustainable behaviour (Heiskanen & Laakso, 2019; Mertens et al., 2021).

Social marketing (Kotler & Zaltman, 1971) also falls within the realm of soft policy tools. By leveraging marketing techniques, this approach utilises persuasion and education to appeal to values or self-interest, encouraging behaviours that align with social and

environmental goals, such as recycling or opting for healthier lifestyles. While targeting emotions plays a significant role in social marketing, and T&H research on this topic has begun to integrate interdisciplinary approaches (Hall, 2016; Rodriguez-Sanchez et al., 2023), the research still frequently emphasises traditional tools grounded in rational economic behaviour models (Barr et al., 2011; Truong & Hall, 2015, 2017). Examples include campaigns that promote carbon offsetting (Ritchie et al., 2021) and signs that inform visitors about trail safety and environmental impact (Neumann & Mason, 2019).

Hard policies play a critical role in addressing urgent sustainability challenges, and conventional soft interventions are important in enhancing consumer awareness and support for other policy tools. However, with a growing understanding of the myriad reasons that contribute to the attitude–behaviour gap in pro-sustainable consumption, scholars and practitioners have recognised the need to include more nuanced soft-policy approaches to increase voluntary change among consumers (Bianchi et al., 2018; Cherry & Kallbekken, 2023; Kollmuss & Agyeman, 200; Lehner et al., 2016; Osman et al., 2021; Stern, 2011).

### **2.3.1 Behavioural Interventions**

Recognising the limitations of traditional soft policy interventions in effectively altering pro-sustainable behaviour among a substantial segment of consumers, researchers across various disciplines, including T&H, have increasingly turned to behavioural economics for insights (e.g., Ariely et al., 2009; Avineri, 2012; Cooper & Kovacic, 2012; Hertwig & Grüne-yanoff, 2017; Nikolova, 2021; Souza-Neto et al., 2022; Thaler & Sunstein, 2008). Behavioural economics challenges the assumptions of traditional economic theories by acknowledging

that individuals make decisions in diverse contexts and often deviate from the predictions of rational choice (Kahneman & Tversky, 1979; Kao & Velupillai, 2015; Lehner et al., 2016). To gain a more 'realistic' understanding of behaviour, this field has primarily integrated knowledge from economics, psychology, and cognitive science, situated within the individualist behaviour change paradigm, although some approaches have also drawn on wider disciplines like sociology and anthropology (Ball & Feitsma, 2020; Nikolova, 2021). The application of behavioural economics to design interventions for real-world problems is called behavioural insights (OECD, 2023). Within this framework, encouraging pro-sustainable behaviour does not mandate a shift in attitudes but can be initiated through changes in the decision environment (Dolan et al., 2012).

While different streams within behavioural economics offer varying interpretations of the rational choice paradigm and its deviations (e.g., Edwards, 1954; Gigerenzer, 2008; Hertwig & Grüne-yanoff, 2017; Kahneman & Tversky, 1979; Thaler & Sunstein, 2008), a prominent assumption within this discourse is bounded rationality (Simon, 1992). Bounded rationality compasses two interconnected elements: the structure of the decision-making environment and the limitations of the mind, including constraints in knowledge, time, or computational abilities (Gigerenzer, 2008). Under bounded rationality, individuals often employ simple decision-making processes to utilise available information, which means that decisions largely rely on contextual factors and personal attributes rather than rational cost-benefit calculations, especially in risky or uncertain situations (Todd & Gigerenzer, 2000). This often leads to 'satisficing' behaviour, which satisfies most needs within a given context (Simon, 1959). The mental shortcuts or biases involved in this process, like a

sense of fairness, anchoring, defaults, or social norms, are sometimes systematic and predictable (Hall, 2013; Kahneman & Tversky, 1979). Bounded rationality is particularly relevant in tourism, where individuals frequently encounter unfamiliar social and physical environments, leading to uncertainty about factors like locally accepted norms or the environmental impacts of their behaviour, thereby adding complexity to decision-making (McCabe et al., 2016; Nikolova, 2021; Smallman & Moore, 2010).

Although bounded rationality and satisficing have long been recognised in behavioural interventions, their susceptibility to contextual factors has gained renewed importance as a tool for changing behaviour in response to sustainability challenges (Mertens et al., 2021). Policymakers and researchers are increasingly exploring ways to foster or counteract simple decision rules and biases, using a wide range of behavioural science concepts and theories (Ball & Feitsma, 2020), to encourage personally or socially desirable behaviour across diverse consumption domains, like meat consumption (e.g., Campbell-Arvai et al., 2014; Garnett et al., 2020; Gravert & Kurz, 2017), transportation (e.g., Avineri et al., 2009; Bamberg et al., 2007; Ropret Homar & Knežević Cvelbar, 2023), and energy use (e.g., Dolan & Metcalfe, 2013; Frederiks et al., 2015). Although several governmental agencies, such as the Swedish Environmental Protection Agency, have applied behavioural insights to inform policy interventions (Lehner et al., 2016), these insights are equally applicable at the destination or organisational level to change consumer behaviour for better environmental and social outcomes. T&H providers are particularly well-positioned to implement such interventions due to their direct interaction with consumers, which

allows them to influence experiences and choices toward more sustainable options.

The application of behavioural economics to interventions is associated with various typologies, the most common of which is the 'nudge', rooted in the heuristics and biases research programme (Banerjee, 2021; Souza-Neto et al., 2022). Thaler and Sunstein (2008) introduced the concept of nudges to translate behavioural interventions into policy recommendations, and it began to appear in sustainable tourism literature around five years later (Hall, 2013). Though sometimes referred to as 'nudge theory', nudging primarily recommends how to change behaviour rather than explaining or predicting it (Juvan & Dolnicar, 2017, p.10; Pedwell, 2017).

Nudging aligns with the philosophy of libertarian paternalism, which seeks to guide individuals toward choices that would enhance their welfare if they had full information and could make fully 'rational' decisions. This approach does not restrict other options; instead, it involves behaviourally informed changes in the 'choice architecture' – the physical, social, and psychological environment where decisions are made (Cooper & Kovacic, 2012; Mertens et al., 2021; Pichert & Katsikopoulos, 2008). Thus, nudges operate within the context of decision-making, influencing behaviour by shaping the choices available to individuals through environmental cues, strategic positioning or framing of options, or manipulating defaults to either facilitate or hinder cognitive biases and heuristics (Souza-Neto et al., 2022; Thaler & Sunstein, 2008). As a result, a particular choice becomes more attractive or default, even if the underlying attributes remain unchanged, which challenges the neoclassical economic notion that individuals inherently know the values of outcomes (Kahneman et al., 1993; Tversky & Thaler, 1990).

Following this, Lindenberg and Papies (2019) argued that the core mechanism of nudging interventions is shifting salience. This can be achieved through ‘behavioural nudging’, which directs attention to concrete alternatives using insights from heuristics and biases research (Kahneman, 2003, 2011), or ‘goal-nudging’, which shifts salience to certain goals to activate them and influence behaviour. Goal-nudging is grounded in Goal-Framing Theory, which posits that the extent to which specific goals and preferences guide behaviour depends on their mental accessibility, influenced by environmental cues (Lindenberg & Steg, 2007). While these two kinds of nudging often work together, it is crucial to consider their separate and combined effects to avoid ineffectiveness or counterproductive outcomes (Lindenberg & Papies, 2019).

Moreover, a key distinction can be made between behavioural interventions that target fast, automatic, and emotional decisions (often referred to as System 1) and those targeting slow, deliberate decision-making (so-called System 2) (Kahneman & Tversky, 1979; see Section 3.1. for a more detailed discussion on Systems 1 and 2). Sunstein (2017) defined interventions designed to counteract biases and enhance deliberate thinking, such as those providing simplified information, as educative nudges. Other behavioural intervention toolkits aimed at promoting reflective changes include boosts (Hertwig, 2017; Hertwig & Grüne-Yanoff, 2017), thinks (John, 2011), and nudge plus (Banerjee, 2021).

These interventions vary in their assumptions about bounded rationality, mechanisms for effecting behavioural change, and the cognitive demands they place on individuals (Banerjee, 2021). For instance, boosts aim to enhance decision-making across situations by targeting the choice environment, competencies, or both, such as



through easily understandable decision trees that outline simple rules of thumb (Barton & Grüne-Yanoff, 2015). Thinks (John, 2011) focus purely on deliberation, encouraging individuals to learn and reflect, such as contemplating a commitment to a plant-based diet (Banerjee, 2021). While commitment strategies have been successfully applied in T&H (Baca-motes et al., 2012), the deliberate implementation of think or boost interventions remains limited. Nudge plus, which has been recently applied in tourism (Yachin et al., 2022), merges a nudge with a deliberative element to prompt reflection about the nudge, enabling individuals to change their beliefs and adapt to a new choice environment. While boosts, educative nudges, thinks, and nudge plus have different goals and assumptions about decision-making, they all aim to promote conscious information processing, fostering long-term changes in preferences and behaviour (Banerjee, 2021; Winterstein, 2022). Osman et al. (2021) broadly classified interventions with minimal intrusiveness into the individual's intentional decision-making as 'soft choice-preserving interventions', emphasising that individuals actively decide whether to engage in the intervention and choose the desirable option.

The classification of different types of interventions, their relative effectiveness, and acceptability is an ongoing and extensive debate (see e.g., Grilli & Curtis, 2021). Due to the often-permeable boundaries between intervention types and a lack of clarity about their theoretical foundations, many behavioural interventions in research and practice are used interchangeably with the nudge concept or broadly referred to as context manipulation (Antonschmidt & Lund-Durlacher, 2021) or choice-architecture interventions (Mertens et al., 2021). Given this broad array of intervention typologies, Souza-Neto et al.'s (2022) review of

behavioural interventions in tourism and sustainability studies proposed a tripod model for conceptualising nudges. This model includes interventions that are (a) paternalistic (that is, easily frame the best options), (b) libertarian-preserving (meaning that people should be free to choose what they prefer), and (c) grounded in behavioural insights (Souza-Neto et al., 2022, p.3).

Following this recent conceptualisation in the sustainable T&H field and the extensive discussion on intervention classification, the present thesis adopts a broad conceptualisation of behavioural interventions, sometimes synonymous with nudges (specifically in Paper 2). This conceptualisation includes interventions that easily frame the best options, allow individuals to choose freely what they prefer, and are grounded in behavioural science to either block heuristics, trigger heuristics or inform. By capturing different behavioural interventions designed to predictably change behaviour and highlighting the diverse mechanisms through which they operate, this conceptualisation also offers a comprehensive yet flexible framework for exploring how various interventions impact pro-sustainable behaviour in different settings.

Based on the above discussion, Figure 2 provides an overview of policy interventions to change individual behaviour, including their broad mechanisms and objectives for effectuating change.



Figure 2: Overview of behavioural change interventions

The definition of behavioural interventions adopted in this thesis includes those that target automatic 'System 1' responses and those aimed at more deliberate 'System 2' information processing. However, categorising interventions into distinct cognitive systems can be challenging due to the dynamic nature of decision-making, context dependence, individual differences, evolving perceptions, and varying understandings of cognitive processes (McCabe et al., 2016; see Section 3.1). Therefore, interventions are often classified based on the psychological levers they target, rather than on assumed cognitive processes (Abrahmse, 2020; Demeter et al., 2023; Dolnicar, 2020; Greene et al., 2023; Mertens et al., 2021; Osbaldiston & Schott, 2011).

The next section reviews behavioural interventions that have been empirically tested in experimental research within T&H, according to the psychological levers they target. This review identifies existing gaps and highlights the applicability of social norm interventions and carbon labels within this thesis.

## 2.4 Behavioural Interventions in Tourism and Hospitality

In recent years, both academia and industry within T&H have shown increasing interest in the potential for meso-level actors, such as restaurants and hotels, to influence consumer decisions through behavioural interventions (Bramwell & Lane, 2011; Dolnicar, 2020; Testa et al., 2018). This growing focus highlights the need for experimental studies to provide empirical evidence on the mechanisms and effectiveness of behavioural interventions in T&H contexts. However, experimental research in this field remains relatively undeveloped (Demeter et al., 2023; Dolnicar, 2020).

Most reviews of behavioural interventions in pro-sustainable consumption literature have focused on behaviour at home, work, or retail rather than in T&H settings. Experimental studies in these domains have tested various behavioural interventions based on diverse psychological mechanisms to encourage pro-sustainable behaviour such as water use (Feizi & Khatabiroudi, 2023; Otaki et al., 2022), recycling (Cialdini et al., 1990; Schultz, 1999), transportation (Bamberg et al., 2007), energy consumption (Dolan & Metcalfe, 2013; Frederiks et al., 2015), food choices (Panzone et al., 2023; Richter et al., 2018), and food waste reduction (Barker et al., 2021; Linder et al., 2018).

The explicit use of psychological theories in intervention studies varies, with some researchers prioritising practical application over theoretical grounding (Coghlan et al., 2023; Dolnicar, 2020). Nevertheless, efforts to map and review existing research have provided an overview of behavioural intervention types and their effectiveness. For instance, Osbaldiston and Schott (2011) conducted a meta-analysis of field experiments, evaluating 253 interventions targeting various PEBs. They found that the most effective interventions involved goal-setting, prompts, social modelling (including social norms), and leveraging preexisting attitudes to encourage behaviour consistent with these attitudes, thereby reducing cognitive dissonance. Additionally, their categorisation of interventions into low- and high-engagement types, aligning with System 1 and System 2 thinking (Kahneman & Tversky, 1979), suggests that low-engagement interventions work best for low-effort behaviours, while high-engagement interventions are suited for more effortful behaviours.

Despite identifying effective approaches, Osbaldiston and Schott (2011) noted the absence of a universally effective intervention and the frequent use of a combination of approaches. Abrahamse (2020) reviewed interventions for promoting sustainable food choices in various home and out-of-home settings, categorising them by their engagement with System 1 and System 2 processes. Her review found that nudging interventions (System 1) and labels such as carbon labels (System 1 and/or 2) were effective for encouraging sustainable food choices, whereas information provision (System 2) worked best when addressing specific behavioural barriers, motivational goals, or social norms. Abrahamse (2020) concluded that more comparative studies are needed to test interventions across different food environments.

Although evaluations covering diverse consumption domains and intervention types provide an overview of work in this field, they offer limited insight into the effectiveness of specific mechanisms due to the inherent complexity of behaviour (Mertens et al., 2021; Maier et al., 2022). Intervention effects vary depending on context and target group, highlighting the need for a more focused approach (Hallsworth, 2022). Recent studies have started to address this gap by reviewing experimental research specifically within T&H. For example, Dolnicar (2020) identified four broad categories of interventions that T&H providers can implement to encourage more environmentally friendly behaviour: leveraging beliefs, social norms, increasing pleasure or instant utility, and altering choice architecture (see Table 1 below for a summary of intervention categories).

Table 1: Intervention categories

<b>Intervention</b>	<b>Intervention</b>	<b>Underlying</b>	<b>Example of</b>
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<b>Category</b>	<b>Type</b>	<b>Mechanism</b>	<b>Intervention (in T&amp;H)</b>
<i>Aimed at facilitating access to decision-relevant information</i>  (System 2)	<b>Changing beliefs</b>	Aim to influence behaviour by providing descriptive information. This may involve justification or instructions concerning the target behaviour.	Labels providing information about CO <sub>2</sub> e emissions; Traffic light like CO <sub>2</sub> e scale (Casati et al., 2023; Cozzio et al., 2020; Filimonau et al., 2017)
	<b>Social norm interventions</b>	Aim to leverage social expectations about acceptable behaviour.	Providing descriptive or injunctive social norm information (Goldstein et al., 2008; Heldt, 2005; Kallbekken & Sælen, 2013)
<i>Built around changes in the decision structure</i>  (System 1)	<b>Choice architecture</b>	Aim to influence behaviour by altering the physical infrastructure.	Increasing the availability, visibility, or convenience of the desirable choice; Priming the desirable choice (Kallbekken & Sælen, 2013; Reinders et al., 2020)
<i>Provide Decision Assistance</i>  (System 1 and 2)	<b>Prompts</b>	Visual cues to remind of/promote a certain behaviour via quick decision-making, increasing convenience.	Posters, signs, and flyers (Morgan & Chompreeda, 2014)
	<b>Enjoyment or pain/ Instant utility focused</b>	Aim to make the target choice more or less appealing through hedonic enhancements.	Certain presentation or description, gamification, incentives, or penalties (e.g., in the form of gifts or discounts) (Coghlan, 2021; Dolnicar et al., 2020; Trabandt et al., 2024)
	<b>Habit</b>	Linked to changes in the physical	Placing recycling bins in hotel rooms to enable

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	infrastructure or prompts to maintain or break habits by focusing on the automaticity of behaviour.	the automaticity of separating waste established at home (MacInnes et al., 2022); Inducing a deliberate choice-making process through information (Garvill et al., 2003).
<b>Commitment</b>	Pledging/binding one to behaviour to leverage people's aim to align their commitment, choices, and behaviour.	Soliciting commitment of hotel guests to reuse their towels via door hanger cards or label pins (Baca-Motes et al., 2012; Terrier & Marfaing, 2015)

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Categorisation of interventions tested in the field of T&H following the frameworks by Abrahamse (2020), Dolnicar (2020), Demeter et al. (2023), Greene et al. (2023), and Osman et al. (2021) with additions from Osbaldiston and Schott (2011) and Mertens et al. (2021). See also Coghlan et al. (2023) for an overview of theories used in behavioural intervention studies in T&H. *Note:* Many interventions leverage several behavioural mechanisms and may fall into several categories. Interventions may also engage different cognitive 'systems' among different individuals.

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Having compared the effectiveness of interventions, Dolnicar (2020) suggested that altering choice architecture is the most effective, followed by increasing pleasure or instant utility, social norms, and changing beliefs. Building on Dolnicar's categorisation, Demeter et al. (2023) conducted a systematic review of 146 field experiments across 53 studies targeting 21 environmentally sustainable tourist behaviours. Their analysis corroborates Dolnicar's (2020) findings on the relative effectiveness of these intervention types. While highlighting a substantial body of work in this field, Demeter et al.'s (2023) review also underscored gaps regarding the range of studied target behaviours, tourism contexts, and psychological mechanisms.



Consistent with those two categorisations, Greene et al.'s (2023) meta-analysis examined interventions specifically targeting meal orders in various restaurant settings, including simulated environments, work or university cafeterias, and general restaurants. Their analysis of 83 interventions, including 25 field experiments, identified similar patterns of effectiveness as Dolnicar et al. (2020) and Demeter et al. (2023). Hedonic enhancements and altered choice architecture proved to be more effective than increasing the visibility of target meals, using descriptive labels, or social norms.

Despite consistent insights into the comparative effectiveness of altered choice architecture and hedonic enhancements, Dolnicar (2020) and Demeter et al. (2023) focused broadly on various T&H related behaviours, including only a few pro-sustainable food choices. In contrast, Greene et al. (2023) concentrated specifically on food choices but also included canteens and cafeterias, which are less pleasure-oriented and more habitual than tourist dining or other out-of-home restaurant contexts (Demeter et al., 2023; Wang, 2023). Thus, questions remain about the effectiveness of different interventions in promoting pro-sustainable food choices in T&H environments, where consumers might prioritise indulgence and encounter less routine and familiarity with menu items (Khan et al., 2024). Moreover, previous reviews (Demeter et al., 2023; Dolnicar, 2020; Greene et al., 2023) primarily assessed the immediate behavioural effects of interventions and, to some extent, their financial implications, neglecting transparency and potential long-term effects. Therefore, the evidenced effectiveness of choice architecture interventions, which target subconscious decision-making without requiring reflection on the available choices, is unsurprising and corresponds

with findings in other fields (Hummel & Maedche, 2019; Mertens et al., 2021).

Belief-based interventions, aligning with theories like the Theory of Planned Behaviour (TPB) (Ajzen, 1985) and the Norm Activation Model (NAM) (Schwartz, 1977; see Section 3.2), involve active information processing, provided individuals pay attention to the intervention. Reviews by Demeter et al. (2023), Dolnicar (2020), and Greene et al. (2023) have suggested that although belief-based interventions are frequently tested, they are generally less effective at changing actual behaviour than other types. Abrahamse (2020) concluded that belief-based interventions, such as those using labels, could encourage sustainable food choices in different dining settings (Spaargren et al., 2013; Vanclay et al., 2011; Visschers & Siegrist, 2015). This discrepancy may arise from differences in intervention classification, target behaviours, and contexts, pointing to knowledge gaps in belief-based interventions aimed at pro-sustainable behaviour in diverse T&H settings.

A key issue is the variation in what constitutes belief-based interventions. For example, reviews by Demeter et al. (2023) and Dolnicar (2020) referred broadly to ‘information provision’ as interventions providing information on environmental impacts, such as the effects of food waste. By contrast, Greene et al. (2023) and Abrahamse (2020) differentiated between belief-based labels and educative information. While educative information simply provides details about the impacts of certain choices (via leaflets, for example), food-related labels are specifically designed to combat limited attention and knowledge during decision-making by simplifying otherwise covert information about products (such as carbon emissions) (Mertens et al., 2021).

Although the classification of labels as a nudge has been debated (Carlsson et al., 2021), they differ from traditional information provision by leveraging psychological mechanisms, such as using certain symbols and colours, to facilitate decision-making (Abrahamse, 2020). As such, labels are highly relevant in terms of enabling consumers to compare options and make informed choices in food contexts (Babkhani et al., 2019). For example, consumers often find it complicated to assess the carbon footprint of menu items, so carbon labelling is required to make the task easier (Thøgersen, 2021). Some scholars argue that labels trigger fast, unconscious decision-making by priming people to select targeted options (Guéguen et al., 2012). However, many other scholars suggest that labels instead involve more deliberate information processing, potentially raising the salience of consumers' sustainability values and beliefs, thereby influencing their choices (Abrahamse, 2020; Grunert et al., 2014; Thøgersen, 2000; Thøgersen & Nielsen, 2016).

While the effectiveness of belief-based interventions involving conventional information provision to promote pro-sustainable behaviours is generally considered limited, the impact of labels on pro-sustainable food choices is less clear. Greene et al. (2023) found labels to be largely ineffective in out-of-home dining settings, whereas Abrahamse (2020) argued that labels could encourage sustainable food choices, both independently and as part of wider information campaigns. Neither review focused specifically on T&H settings like restaurants at tourist destinations, where decision-making is more hedonically driven, and both reviews only focused to a limited extent on à la carte restaurants offering a range of labelled food choices on menus. Thus, it remains uncertain how labels on menu options might influence consumers' food choices in such

contexts, also considering impacts on their dining experiences and the restaurant's image as a responsible establishment.

The second most common intervention type in T&H settings – social norm interventions, or 'norm-nudges' – has been applied to various pro-sustainable behaviours, above all PEBs (Demeter et al., 2023; Souza-Neto et al., 2022). These interventions leverage aspects of social influence by emphasising others' behaviour or approval, based on the assumption that individuals' preferences for behaviour are influenced by the actions and expectations of others (Bicchieri, 2023; Bicchieri et al., 2019; Cialdini et al., 1990). As such, social norm interventions also target changes in beliefs, and thus generally conscious information processing, specifically the belief about common or expected behaviour to subsequently influence individual behaviour. Reviews indicate varying effectiveness, with recent studies showing a success rate of around 50 per cent in T&H and other out-of-home dining settings (Greene et al., 2023). However, social norms are often used as part of short prompts, information, or feedback provisions, and many studies have suggested that effectiveness can be improved when multiple intervention types are combined (Demeter et al., 2023). This underscores the need to further test various combinations of interventions targeting pro-sustainable behaviours in T&H to potentially enhance the effectiveness of belief-based strategies.

Despite significant research, studies evaluating behavioural interventions in T&H settings typically focus on a limited range of PEBs in hospitality businesses, such as towel reuse, room cleaning, water use, food waste, and, to a lesser extent, food choice. Most other behaviours have been the focus of only one or two studies (Demeter et al., 2023; Dolnicar, 2020; Souza-Neto et al., 2022; Viglia & Dolnicar,

2020). The interventions targeting food choices have predominantly focused on vegetarian options, and only a few have measured actual behaviour through field experiments, particularly in restaurants with full à la carte menus (Garnett et al., 2020). Moreover, only a few researchers have tested behavioural interventions aimed at behaviour contributing to social or economic as opposed to environmental sustainability, such as donations for the management of cross-country trails (Heldt, 2005) and museums (Martin & Randal, 2008). Expanding experimental studies to include a wider range of pro-sustainable behaviours in T&H is essential, given that intervention effectiveness depends significantly on the target behaviour and its contextual factors.

In summary, this review of behavioural intervention studies in T&H aligns with reviews from the broader field of pro-sustainable consumption, emphasising that low-engagement interventions are typically most effective for achieving immediate behaviour changes. While more choice-preserving, belief-based interventions like carbon labels and social norms show mixed results in promoting pro-sustainable behaviour within T&H, notable research gaps remain concerning different behaviours, application settings, and designs. Specifically, more research is needed to explore how these interventions impact behaviours contributing to social or economic sustainability, as well as their influence on pro-sustainable food choices in T&H dining contexts, where consumer decisions may differ significantly from other settings. There is also a need for further investigation into the effectiveness of combined interventions to determine whether they can drive more substantial changes in pro-sustainable behaviour.

These gaps need to be addressed because social norm and label interventions have the potential to raise awareness and reinforce pro-sustainable behaviour among consumers. Examining these interventions in underexplored T&H settings can provide deeper insights into the drivers and barriers of pro-sustainable behaviour. Importantly, previous reviews (Demeter et al., 2023; Dolnicar; 2020; Greene et al., 2023; Souza-Neto et al., 2022) have underscored that interventions in T&H are more likely to succeed if they enhance consumer pleasure or, at the very least, do not reduce it and do not impose significant costs on businesses. To better understand the practical implications and effectiveness of interventions, field experiments are essential because they test interventions in real-life settings in collaboration with T&H providers (Viglia & Dolnicar, 2020). Building on this foundation, the following sections review field experimental research on social norm interventions and labels, particularly carbon labels on food options, in the context of pro-sustainable consumer behaviour in T&H.

### **2.4.1 Social Norm Interventions**

Recognising that sustainability challenges like climate change require significant changes in social norms, and that appeals to personal norms have often been ineffective, researchers and policymakers have increasingly focused on social norm interventions (short, norm-nudges) (Burchell et al., 2013; Kinzig et al., 2013; Tankard & Paluck, 2016). These interventions leverage the influence of perceived common behaviours or attitudes within a group to encourage individuals to adopt desirable behaviours (Bicchieri, 2023). Targeting social norms becomes particularly relevant when encouraging pro-sustainable behaviour related to collective goals, where individuals typically need to perceive that others are also contributing in order to believe

that their actions can effectively address sustainability issues (Bicchieri & Xiao, 2007).<sup>1</sup>

Social norm interventions can either target public or private behaviour. For instance, in private spaces like hotel rooms, where social pressures are minimal and the primary focus is relaxation, it becomes crucial to make social norms about desirable sustainable behaviours salient. An example is Goldstein et al.'s (2008) seminal field experiment, where informing hotel guests that most others in the same room reused their towels increased towel reuse by approximately 44 per cent. This effect was particularly pronounced when using local norms, referring to guests who stayed in the same room. Others have replicated this study with similar results, although often with smaller effect sizes (Bohner & Schlüter, 2014; Gössling et al., 2019; Terrier & Marfaing, 2015).

Taking this one step further by making private behaviour public to engender normative influence, Baca-Motes et al. (2012) found that having tourists commit to towel reuse and providing them with a pin

<sup>1</sup> Scholars have also increasingly discussed the need for social norm interventions ('norm design', 'norm engineering', or 'norm management') to engender more systemic sustainability changes (Dolnicar, 2020; Kinzig et al., 2013; Reijula et al., 2018). A key argument in such discussions is that individual-level nudges or similar interventions have limited value in addressing inherently collective challenges. In the context of tourism, Bimonte (2016) emphasised that residents at destinations should be the ones sharing a defined set of norms with tourists, allowing them to 'become part of the collective conscience' (p.10) and making non-conformance more visible and costly due to social sanctions or feelings of guilt. Ideally, this leads to a reputation effect, influencing the types of tourists the destination attracts and their behaviour, acknowledging the interdependencies of the social system in which tourist behaviour is situated.

to communicate their behaviour significantly increased towel reuse. Making social norms salient for donations to common goods like national parks or recreational trails has also proven effective. Alpízar et al. (2008) revealed that donations to a National Park made in the presence of a solicitor were 25 per cent higher than those made in private, while Heldt (2005) showed that informing cross-country skiers about others' contributions to track maintenance encouraged similar donations. Similar results were observed in a study focused on donations for a museum (Martin & Randal, 2008).

In public spaces like restaurants, where choices are more visible, different forms of social influence can be leveraged. For instance, Kallbekken and Saelen's (2013) field experiment involved a table sign to communicate that it was acceptable to return to the buffet multiple times, which reduced guests' shame and the likelihood of overloading their plates. The intervention decreased food waste by 21 per cent compared to a condition without a sign, without negatively affecting guest satisfaction. However, interventions targeting public food choices risk inducing negative feelings like shame or guilt (Sirieix et al., 2017). For instance, offering a doggy bag by default can increase uptake and reduce plate waste but may negatively impact restaurant and waitress evaluation (Van Herpen et al., 2021). As food choices are often considered a cultural right, similar reactions may occur with interventions aimed at publicly visible pro-sustainable food choices (Osman et al., 2021).

Another approach to leveraging social influence involves endorsement. When individuals see choices endorsed by respected others or those within their social group, it can create social proof of the 'correct' behaviour for a given situation (Abrahamse & Steg, 2013; Tajfel, 1979). Moreover, endorsement can tap into the desire for



conformity by showcasing that a behaviour is supported by an influential person or a social community that individuals identify with or wish to identify with. This can create a sense of belonging and new behavioural norms (Hanna et al., 2018; Lindenberg et al., 2011). Although endorsement has been studied in various domains (Halder et al., 2021), research in pro-sustainable consumption in T&H is extremely limited. Two field experiments at hotel buffets tested different persuasive messages with and without endorsement by hotel managers to influence tourists' healthy and ecological food consumption. The results indicated that endorsement was effective for some messages, particularly those related to taste and local purchasing of buffet items, but not for nutritional and ecological features (Cozzio et al., 2022; Volgger et al., 2021).

In addition to direct information about the behaviour and expectations of others, commitment, and endorsement, interventions have also targeted broader social norms such as social responsibility, social identity, reciprocity, and fairness, (Alpízar et al., 2008; Dolnicar et al., 2019; Ekelund & Bergquist, 2023) or the related concept of conditional cooperation, where individuals cooperate with others based on the expectation of reciprocation (Bicchieri, 2023; Cialdini & Goldstein, 2004; Fehr & Schurtenberger, 2018). In line with findings on traditional information provision and belief-based interventions, experiments concerned with PEBs in T&H have shown mixed results in terms of appealing to social responsibility.

Some studies have suggested that emphasising collective action and its connection to sustainability challenges, such as climate change, can positively impact behaviour, compared to focusing on the negative effects of individual actions (Lavalée et al., 2019; Thøgersen, 2021). This aligns with Lindenberg's (2012) idea of goal-nudging, which

suggests that sustainability goals can be activated by framing contexts as joint efforts toward a common goal. In turn, Dolnicar et al.'s (2017, 2019) quasi-experimental studies found that targeting social responsibility alone is insufficient to encourage guests to waive room cleaning. However, offering a free drink as a reward for opting out to enhance perceived equity effectively reduced daily room cleaning. Perceived equity or reciprocity can also be seen as a driving force behind conditional cooperation, as observed by Frey and Meier (2004), Shang and Crosson (2005), and Heldt (2005). These field experiments indicated that willingness to cooperate commonly depends on the expectation of a similar response from others, made salient through information about others' behaviour, although individual adherence to this conditional cooperation varies (Bicchieri, 2006; Fehr & Schurtenberg, 2018).

Overall, influencing actual behaviour of consumers often first requires adjustments to perceived norms, especially where behaviours are hidden and consumers may be uncertain how to behave, as could be the case with donations for nature-based trails. Targeting established perceived social norms like reciprocity can be a relevant intervention to achieve this, particularly when combined with clear information about expected and common donations (Fennell, 2006; Heldt, 2005; Shang & Croson, 2009). Research outside T&H has shown that social norm interventions are among the few interventions to have shown long-term behavioural impact even after the interventions have been removed (Allcott & Rogers, 2014; Schultz et al., 2007; van der Linden, 2018). Studies on humanitarian donations suggest that such interventions may also lead to positive spillovers to other types of pro-social behaviour (Nook et al., 2016), which is promising for addressing sustainability challenges in T&H, where

multiple behaviour changes are often required. However, given the variability in individuals' adherence to social norms and their context-specific nature, a refined approach is necessary for applying social norm interventions effectively. As discussed, field experimental studies on various social norm interventions related to T&H sustainability issues remain limited, particularly in contexts beyond hotels.

### **2.4.2 Labels**

For customers to be able to make informed pro-sustainable food choices, they need to receive relevant information about the environmental or social impacts of various options at the point of decision (Potter et al., 2022). Food-related labels range from those indicating food miles, certifying organic production, or communicating carbon footprints to those summarising multiple environmental indicators (Cassidy, 2022). Extensive research has been conducted on the role of such labels in out-of-home consumption contexts like restaurants, cafeterias, canteens, or hotels (Fernandes et al., 2016; Filimonau et al., 2017; Winterstein, 2022).

The predominant research emphasis has been on labels addressing healthy food selection, for instance by providing consumers with nutritional value information at buffets (Cadario & Chandon, 2020; Fernandes et al., 2016). Only recently have researchers started to examine the impact of environmental labels, such as carbon labels, vegetarian/vegan/plant-based labels, or local and organic labelling on consumers' food choices in out-of-home settings (Greene et al., 2023). While several studies have demonstrated the influence of local or organic food labels on consumer choices (Cozzio et al., 2022; Merle et al., 2016; Miller, 2018; Sirieix et al., 2013), attempts to address environmental challenges like climate change have found that local or

organic sourcing does not guarantee lower environmental impacts (Futtrup & Grunert, 2023; Gössling et al., 2011). Carbon labels, which provide clear information on a product's carbon dioxide equivalent (CO<sub>2</sub>e) emissions, are designed to guide consumers towards more climate-friendly choices (Panzone et al., 2023).

Field experiments on carbon labels have largely been conducted in university or work canteens, demonstrating modest (Brunner et al., 2018; Lohmann et al., 2022; Spaargaren et al., 2013) to medium effects on behaviour and carbon emission (Slapø & Karevold, 2019). Research extending beyond traditional restaurant settings is limited, with few studies exploring how tourists respond to carbon labels in destination and hotel restaurants (Demeter et al., 2023). For example, Cozzio et al. (2020) tested the impact of different factual appeals, finding that health or local origin labels had a substantial effect on consumption, whereas carbon labels were less effective. While this finding supports the notion that tourists are more easily influenced by self-benefit appeals than other-oriented appeals, Cozzio et al.'s (2020) experiment used carbon labels on only one buffet item, making it harder for customers to interpret the information compared to having multiple labelled dishes. Carbon labels including CO<sub>2</sub>e emissions are generally more abstract and difficult for consumers to process than labels indicating local origin or nutrition information (Merle et al., 2016). To increase their comprehensibility, carbon labels have been used alongside other interventions. For example, Brunner et al. (2018) used a traffic light system for carbon labels and provided additional information about food and climate change online and on posters in a cafeteria. This intervention significantly increased climate-friendly dishes with green labels. However, similar to findings in retail settings, carbon labels did not seem to deter the

consumption of high-emission products (Vanclay et al., 2011; Vlaeminck et al., 2014).

Although survey studies provide additional insights into how different carbon label designs may impact food choices (e.g., Grunert et al., 2014; Kühne, et al., 2023; Lane et al., 2023; Meyerding et al., 2019), recommendations cannot always be transferred to real-life restaurant contexts. For example, surveys indicate that incorporating traffic-light-like colour scales alongside absolute CO<sub>2</sub>e numbers provides clearer distinctions between high and low emissions (Feucht & Zander, 2018; Lemken et al., 2021; Meyerding et al., 2019; Rondoni & Grasso, 2021). Some studies have even suggested that red labels may be particularly effective by capturing consumers' attention (Brunner et al., 2018; Carrero et al., 2021). However, red labels can induce guilt and backlash, which may limit their acceptance in profit-oriented businesses (Casati et al., 2023). Notably, while serving highly unsustainable 'red' meals should be reconsidered altogether, they could serve as a comparison for consumers and potentially removed later as awareness of their negative implications increases and more sustainable alternatives become available.

Another approach involves labelling climate-friendly dishes as 'Chef's Recommendation' or 'Dish of the Day'. However, experimental results on this strategy are also mixed (Bacon & Krpan, 2018; dos Santos et al., 2018; Perez-Cueto, 2021; Saulais et al., 2019; Zhou et al., 2018). Bacon and Krpan (2018) found that the effect of a 'Dish of the Day' intervention is moderated by past behaviour, with frequent vegetarians being less likely to choose the targeted vegetarian option compared to infrequent vegetarians, possibly due to feeling justified in acting less sustainably after usually choosing sustainable options. Saulais et al. (2019) noted that the effect of a

'Dish of the Day' intervention was greater for less popular dishes and increased with the number of options, possibly because it helped reduce decision overload. The only studies exploring similar recommendation interventions in T&H contexts are field experiments by Cozzio et al. (2022) and Volgger et al. (2021), which combined persuasive messages with endorsement of certain items at hotel buffets.

Overall, experimental studies in real out-of-home dining settings highlight that existing labels and their effect on consumers' food choices are highly heterogeneous. Carbon labels tend to be more effective among consumers who are already concerned about climate issues and possibly those seeking decision assistance due to numerous options (Carfora et al., 2019; Saulais et al., 2019), which aligns with findings on nutrition labels, prompts, and general eco-labels (e.g., Karlsson & Dolnicar, 2016; Shearer et al., 2017). The impact of carbon labels also interacts with various other factors in out-of-home dining contexts, such as atmosphere, serving style, social influence, and price (Futtrup & Grunert, 2023). This complexity contributes to differing conclusions in literature reviews regarding label effectiveness in promoting pro-sustainable food choices in T&H settings (Abrahamse, 2020; Bianchi et al., 2018; Greene et al., 2023). However, it also highlights that significant gaps remain in label designs, the combination of interventions like carbon labels and endorsement, and their application in different real-life restaurants, particularly à la carte restaurants. It is important to address these gaps in order to develop carbon label interventions that support informed choice while maintaining positive customer experiences and profitability in the T&H industry (Futtrup & Grunert, 2023).

Before I discuss the behavioural theories that help to understand pro-sustainable behaviour and guide intervention design in this thesis, the next section addresses key critiques of behavioural interventions, emphasising their practical and ethical implications in encouraging pro-sustainable behaviour within T&H settings.

### **2.4.3 Critiques and Defences**

As approaches to influence behaviour, behavioural interventions have sparked substantial criticism on diverse theoretical, normative, and ideological grounds. Numerous scholars have deliberated on the ethics of behavioural interventions, particularly nudges, within the context of policymaking (e.g., Clavien, 2018; Noggle, 2018; Schmidt & Engelen, 2020; Schubert, 2015; Selinger & Whyte, 2011; van der Heijden & Kusters, 2015; Viale, 2018). These concerns are also pertinent to interventions at the organisational or destination level in T&H, which reflects the complex and contested nature of pursuing sustainability.

A major point of criticism is the fundamental premise of nudging, which is characterised as a libertarian paternalistic approach that guides individuals towards welfare-enhancing options without restricting choices (Thaler & Sunstein, 2008). Sunstein (2013) defined welfare broadly as 'whatever choosers think would make their lives go well' (p. 1852). However, it is generally not possible to determine what fits the individual chooser; instead, assessments typically reflect the average preferences, especially assuming that individuals lack a stable preference order (Barton & Grüne-Yanoff, 2015; Nagatsu, 2015). Consequently, while some so-called 'green nudges' aimed at reducing negative externalities may not promise to enhance the individual's welfare directly (Carlsson et al., 2021), critics argue that nudges are paternalistic because choice architects make decisions

about what constitutes the ideal decision for individuals (Burgess, 2012; Hagman, 2018). Much of this discussion stems from the United States, reflecting an emphasis on liberal values and freedom of choice. In countries like Sweden, which traditionally have a strong welfare state with collective solutions, the perception of nudges as overly paternalistic may be less pronounced (Hagman et al., 2015).

Another prominent concern is the longevity of behaviour change, although evidence on this is currently inconclusive (Beshears & Kosowsky, 2020; Congiu & Moscati, 2021). As further outlined in the following section (Section 3.1.), nudges targeting subconscious decision-making generally do not provide feedback about the implications of choices, reveal inconsistencies, or aim to generate awareness and changes in preferences (Hertwig & Grüne-Yanoff, 2017), all of which are important for meaningful long-term changes in pro-sustainable behaviour (Lehner et al., 2016; UNEP, 2020).

Another important consideration in the T&H context is that interventions targeting subconscious decisions might miss opportunities to enhance the provider's image and the consumer's experience. For instance, whether engaging in pro-sustainable behaviours (such as donating to preserve a natural area) contributes to an individual's positive experience, and not just the welfare of the destination, depends on perceived costs and benefits, such as the reuse of the area, and gratification from other-oriented behaviour (Holbrook, 1999; Steg et al., 2014a). Interventions like defaults, which might manipulate visitors into donating, could harm their experience. Such interventions might also fail to address the intrinsic motivation and positive feelings associated with doing something good for others or the environment, which could benefit the provider's image and the consumer's personal experience (Bruns & Perino, 2021; UK



Science and Technology Committee, 2011). Ultimately, while T&H consumers primarily seek positive experiences, their specific contributing goals are diverse, dynamic, and potentially conflicting, which makes it challenging to determine their ideal choices (Gnoth, 1997; Lindenberg, 2008). Therefore, interventions that target subconscious decisions might primarily be effective for immediate behaviour change at a low cost but not enhance awareness or consumer experience.

In response to these critiques, researchers and policymakers have proposed various frameworks for assessing the ethics of behavioural interventions (Clavien, 2018; Hagman, 2018; Lades, & Delaney, 2020; Selinger & Whyte, 2011). For example, the Nuffield Council on Bioethics introduced an 'Intervention ladder' that categorises interventions from least to most coercive, including doing nothing, providing information, enabling a choice, defaults, incentives, disincentives, restricting choices, and eliminating choices. The ladder emphasises that more obtrusive interventions require stronger justification, which should be weighed against restrictions to free choice (Nuffield Council on Bioethics, 2007; Osman et al., 2021). Intervention transparency and engagement levels are also claimed to be important for addressing ethical objections (Hagman, 2018; Schmidt & Engelen, 2020). A common agreement is that interventions targeting subconscious responses, like defaults, carry a greater risk of being manipulative, whereas those involving conscious information processing, such as carbon labels, contribute to informed choice and individual accountability (Noggle, 2018; Winterstein, 2022).

Furthermore, as arguably no design is neutral (Thaler & Sunstein, 2008) and it is challenging to objectively differentiate between 'good' and 'bad' interventions (Pedwell, 2017), understanding the target

audience's perceptions of behavioural interventions can help validate the interventions (Sunstein et al., 2018). Studies generally show high public acceptance of behavioural interventions, including those targeting PEBs, with variations based on culture, purpose, and intervention type (Banerjee et al., 2021). For example, research on interventions for air travel behaviour across four Western Countries found that most participants favour softer strategies like nudges over more restrictive regulatory intervention, although there are differences based on nationality (Higham et al., 2016). Public support is generally higher for transparent interventions (Hagman et al., 2015; Osman et al., 2021; Sunstein et al., 2018).

In T&H, it has become common practice among some researchers to assess intervention acceptability before field testing, although the focus is on satisfaction rather than normative and ideological acceptance (Dolnicar, 2020; Zinn et al., 2023). Some studies have found no reduction in satisfaction with subconscious mechanisms (Dolnicar et al., 2018; Knežević Cvelbar et al., 2018), while others have observed that defaults might limit perceived freedom of choice or induce guilt (van Herpen et al., 2021; Theotokis & Manganari, 2014), which can negatively affect consumers' experiences and evaluations of providers. Such findings highlight the distinct challenge in T&H to evaluate interventions not only for their effect on the intended behaviour but also on the experience (measured as satisfaction).

In summary, the acceptance of behavioural interventions remains inconclusive. Informative behavioural interventions are generally viewed as more ethical (Schubert, 2017), but automatic nudges may be justified in some areas by the urgency of solving problems like climate change, particularly when consumers actually 'do not care much', such as for towel reuse (Nikolova, 2021, p.198). Because there

is no one-size-fits-all approach to interventions, it is critical to assess trade-offs between (long-term) gains, physical, emotional, and cognitive costs, as well as potential errors on a case-by-case basis, considering the specific target audience and intended outcomes (Camerere et al., 2003; Schmidt & Engelen, 2020).

Given that the aim of my thesis is to study pro-sustainable behaviour of T&H consumers and its drivers and barriers, I have concentrated on more deliberate, choice-preserving behavioural interventions, as conceptualised in the previous section (Osman et al., 2021; Souza-Neto et al., 2022). Specifically, the preceding review highlights gaps in the design and application settings of social norm and carbon label intervention. Since these are often also perceived as more ethical and applicable in raising awareness and reinforcing pro-sustainable behaviours, they are central to my studies. I consider them to be one tool within a broader toolkit for promoting pro-sustainable behaviour, focusing on the immediate context but potentially serving as catalysts prompting individuals to reconsider their behaviours and contributing to broader awareness (Mont et al., 2014). With flexibility for contextualisation, these interventions can be adapted based on feedback and changing circumstances, making them applicable in diverse T&H settings and offering providers accessible and immediate results.

As social norm and carbon label interventions require a certain level of consumer motivation to engage, and given that the primary goal of consumption in T&H is positive experiences, promoting desired behaviours should enhance – or, at least, not interfere with – consumers’ experiences. Accordingly, such behavioural interventions need to consider the specifics of T&H contexts, including their

experiential and hedonic nature, as well as the unfamiliarity with the destination and consequences of behaviour.

### **3 Theoretical Foundations for Pro-Sustainable Consumer Behaviour**

In this chapter, I discuss the key theoretical models and concepts that are relevant to understanding and changing pro-sustainable behaviour in this thesis. Various psychological theories aim to explain pro-environmental or pro-social behaviour, providing a base for behavioural change interventions (e.g., Adams, 1963; Hines et al., 1987; Lindenberg, 2000; Schwartz, 1977; Steg et al., 2014a; Stern, 2000). Despite the variety of these theories, many have been applied only sporadically in pro-sustainable interventions within T&H (Dolnicar, 2020; Tang, 2014). Additionally, many intervention studies lack clear theoretical linkage, often due to inconsistent use of language and constructs (Souza-Neto et al., 2022).

The diversity of behavioural theories also reflects the different belief systems of those advocating for behaviour change through specific intervention types (Hall, 2016). While this theoretical multiplicity can create confusion about their application in T&H, it also illustrates the significant variation in the behavioural drivers across different behaviours, consumer groups, and contexts. No single theory fully captures the complexity of pro-sustainable behaviour, which encompasses a wide range of behaviours influenced by various external, internal, and social factors (for reviews, see, e.g., Kollmuss & Agyeman, 2002; Li et al., 2023; Testa et al., 2021). However, existing theories offer valuable insights into these influencing factors, offering possible explanations for the outcomes of interventions and insights

that can be replicated or built upon in different contexts (Ajzen, 1985; Schwartz, 1977; Steg & Vlek, 2009; Stern, 2000).

The chapter begins by examining the System 1 and System 2 perspective, which offers a foundational understanding of human decision-making processes underpinning many behavioural interventions and sets a broad framework encompassing various behavioural theories and constructs. Subsequent sections review more specific behavioural theories that are used in the literature on pro-sustainable behaviour in T&H and throughout my thesis. These are summarised in Section 3.7, providing an overview of their relevance and application in the context of this research.

### 3.1 System 1 and System 2

Drawing on dual-process theories and research within the heuristic and biases research programme (Kahneman & Tversky, 1979), Kahneman (2011) popularised the concepts of two systems of thinking within judgement and decision-making (Gawronski & Creighton, 2013). System 1 involves fast, automatic, emotional, and intuitive decisions, guiding routine tasks, while System 2 entails slower, more deliberate decision-making that requires more mental effort. Although System 1 generates efficient first responses, these can be susceptible to systematic biases that System 2 often fails to rectify (Kahneman & Tversky, 1979). Therefore, outcomes derived from System 2, such as reported intentions, may significantly differ from those of System 1 (Ropret Homar & Knežević Cvelbar, 2023). It is important to note that these systems do not present distinct all-or-nothing conditions, as has been suggested in the literature, but operate and influence each other to varying degrees depending on the choice and environment (Evans, 2007; Garcés, 2022). In a critique

of general tourist decision-making models, some tourism researchers have adopted dual system theory, acknowledging that tourists face various choices and may employ different decision-making strategies in each context (McCabe et al., 2016).

Rooted in the heuristic and biases research program, nudging embraces the dual-system perspective by either leveraging System 1's motivational and cognitive shortcomings or fostering System 2 decision-making to steer people towards better decisions. Proponents of the dual-system view, along with scholars in T&H (Demeter et al., 2023; Dolnicar, 2020; Greene et al., 2023), generally suggest that System 1 nudges tend to be more effective at achieving desired behavioural outcomes than attempts to de-bias by engaging System 2 (Hertwig & Grüne-Yanoff, 2017). This is unsurprising, given that System 1 nudges demand less cognitive processing and are less susceptible to individual differences like values and goals (Mertens et al., 2021).

Studies have supported this in interventions involving small changes in physical infrastructure or defaults (Lehner et al., 2016; Schubert, 2017; Souza-Neto et al., 2022). In T&H research, defaults have proven powerful in experiments on daily room cleaning (Knežević Cvelbar et al., 2020), offering restaurant consumers doggy bags as the default (van Herpen et al., 2021), or changing the default invitation to offset carbon emissions in a conference package (Araña & León, 2013). Another notable System 1 nudge in T&H is changing the physical infrastructure by reducing plate sizes at buffets to mitigate food waste, which has been effective in diverse buffet settings (Richardson et al., 2021; Wansink & van Ittersum, 2013), including a hotel breakfast buffet (Kallbekken & Sælen, 2013). Furthermore, Ropret Homar and Knežević Cvelbar (2023) showed that a System 1 nudge

involving framing increased participants' engagement in voluntary carbon offsetting, even among those with negative attitudes.

Other behavioural interventions, involving more cognitive effort, vary in their assumptions about the duality and interaction of cognitive processes. For example, nudge plus approaches are situated close to the dual processes perspective but assume it is possible to trigger both processes simultaneously, with their interplay being context-dependent on the specific behavioural change problem (Banerjee, 2021). Boosts, in turn, are based on a different interpretation of bounded rationality, grounded in the Simple Heuristics research programme and a singular cognitive process theory (Banerjee, 2021; Grüne-Yanoff & Hertwig, 2016). Rather than 'co-opting' individuals' heuristics, proponents of boosts posit that decision-making can be improved by enhancing people's heuristic 'toolbox' through changes in skills, knowledge, decision tools, or the environment (Banerjee, 2021; Hertwig & Grüne-Yanoff, 2017). This requires that boost interventions are transparent and cooperation from the targeted individual.

A key aspect of automatic interventions and interventions that incorporate deliberation is the longevity of effectiveness. However, empirical evidence about the long-term effects of different behavioural intervention types remains limited (Banerjee, 2019; Congiu & Moscati, 2021). Some studies have indicated that certain System 1 nudges work in the long run. For example, defaults had long-term impacts on employees who chose to work standing instead of sit (Venema et al., 2018), or on Swedish retirement savers to participate in a premium pension plan (Cronqvist et al., 2018); these results were probably due to the fact that people simply maintained the default. Conversely, Van Rookhuijzen et al. (2021) found that after

removing a default nudge, its effect only remained for one target behaviour – namely, participants’ decision to complete a longer survey – and not for healthier food choices. While the heterogeneity in effects may stem from the need for participants to make active decisions during subsequent measures in Van Rookhuijzen et al.’s (2021) experiment and the complexity and habitual nature of food choices, further research is necessary (Banerjee & John, 2021; Greene et al., 2023).

Studies assessing the long-term impact of System 2 nudges have shown more sustained effectiveness. For example, providing social norm information encouraged prolonged energy savings (Dolan & Metcalfe, 2013) and increased use of stairs instead of elevators (Burger & Shelton, 2011), and distributing behaviourally informed leaflets promoted household food waste recycling in Sweden months after the intervention (Linder et al., 2018; see also Bernedo et al., 2014; Kuhfuss et al., 2016; Wakefield et al., 2015). However, some research indicates the opposite (Congiu & Moscati, 2021; Foxcroft et al., 2015). Moreover, while there is much discussion about the long-term impacts of nudges compared to boost or nudge plus, empirical evidence remains sparse. Paunov and Grüne-Yanoff (2023) demonstrated that boost outperformed social norm nudges in terms of encouraging sustainable energy use, while Banerjee (2019) showed that nudge plus had more prolonged impacts on reducing meat consumption among university students than simple nudges did.

Given the limited research on the long-term effectiveness of interventions based on the System 1 and System 2 perspective, further investigation is needed to gain a comprehensive understanding, considering factors like individual dispositions, the perceived credibility of interventions, and the specificity of the



targeted behaviour and its related impacts (for example, on similar behaviours or the consumption experience) (Congiu & Moscati, 2021; Osman & Nelson, 2019). Nevertheless, existing evidence does suggest that interventions targeting more deliberate decision-making may have longer-term impacts by persuading individuals more consciously about the benefit of certain choices, especially for more habitual or complex behaviours, such as food choices in T&H settings (Congiu & Moscati, 2021).

## 3.2 Cognitive Behavioural Models

Cognitive behavioural models, such as Schwartz's Norm-Activation model (NAM), the Value-Belief-Norm (VBN) Theory of Environmentalism by Stern (2000), and Ajzen's (1985) Theory of Planned Behaviour (TPB), emphasise the influence of attitudes, perceived control, and norms on intentions and behaviour. Despite the recognised limitation that intentions may not always translate into behaviour, and changing attitudes may not suffice for driving pro-sustainable behaviour among a significant portion of consumers in T&H (Dolnicar & Demeter, 2023; Passafaro, 2020; Wu et al., 2023), these models remain widely applied in the field and provide valuable insights into key determinants interacting with attitudes in shaping behaviour (Li et al., 2023; Tang, 2014; Ulker-Demirel & Ciftci, 2020).

Attitudes are a multifaceted concept; they are often vaguely defined as evaluations of certain objects, events, people, or behaviours but used inconsistently in behavioural change literature, referring both to general attitudes towards sustainability and specific attitudes towards target behaviours (see Passafaro, 2019 for a review). While this complexity contributes to the concepts' limited applicability in promoting pro-sustainable behaviour, it underscores that attitudes

play a significant role in behaviour, interacting with various cognitive, affective, and behavioural elements (Ajzen 1985; Passafaro, 2019; Steg et al., 2014a).

Fishbein and Ajzen (1985) integrated attitudes into the Theory of Planned Behaviour (TPB), suggesting that intentions mediate the relationship between attitude and behaviour. Specifically, behavioural intentions stem from an individual's attitudes, subjective norms, and perceived behavioural control (Ajzen, 2012), which are influenced by behaviour-relevant beliefs based on various background factors (Sommer, 2011). Perceived behavioural control, or self-efficacy, reflects an individual's perceived capability of implementing a behaviour (Kaiser & Schultz, 2009; van Valkengoed et al., 2022). This is relevant to T&H, where broad sustainability attitudes may translate into different pro-sustainable behaviours, ranging from easy actions like reusing towels to more challenging ones like choosing train travel over air travel (Albrecht et al., 2024). Researchers have applied the TPB to study various pro-sustainable behaviours in T&H, such as intentions to patronise restaurants with organic menu items (Shin et al., 2018), visit environmentally friendly establishments (Jang et al., 2014), or pay for park conservation (López-Mosquera et al., 2014; Ulker-Demirel & Ciftci, 2020). While these studies mainly assess stated intentions, they also highlight the potential significance of social norms and perceived behavioural control in influencing pro-sustainable behaviours.

To increase the predictive power of the TPB, researchers often integrate constructs from Schwartz's (1977) Norm-Activation Model (NAM) (e.g., Fauzi et al., 2022; Joo et al., 2022; Savari et al., 2023; Shin et al., 2018). The NAM underscores the significance of internalised norms in behaviour, positing that awareness of consequences,

attribution of responsibility and outcome efficacy (the extent to which individuals perceive behaviour as effective in addressing sustainability problems) can prompt a moral obligation to act (personal norms), thereby influencing behaviour (van Valkengoed et al., 2022).

The Value-Belief-Norm (VBN) theory (Stern, 2000) builds on the NAM to explain PEBs, by embedding norm activation within a framework of core altruistic, biospheric, and egoistic values that shape environmental beliefs. While individuals possess all three value orientations, their relative strength varies, which explains differences in awareness of consequences and feelings of personal responsibility (Kollmuss & Agyeman, 2002; Stern et al., 1999). Survey studies in T&H have demonstrated the relationships between NAM constructs and pro-sustainable behaviours, such as attending environmentally responsible conventions (Han, 2014) and making pro-sustainable food choices in restaurants (Shin et al., 2018). These studies highlighted the significance of personal norms in pro-sustainable behaviour and indicated that ascribing responsibility and efficacy (linked to perceived behavioural control in the TPB) can activate personal norms (Confente & Scarpi, 2021; Gregory et al., 1994).

There are many other expansions and combinations of the theories; some are context-dependent, and others are applicable across different pro-sustainable behaviours. These include factors such as habit (MacInnes et al., 2022; Rees et al., 2018), psychological and physical distance (e.g., Grazzini et al., 2018; Liu et al., 2021; Song et al., 2023; Trope & Liberman, 2003), knowledge (e.g., Kaiser & Fuhrer 2003), and anticipated emotions (Al Zaidi et al., 2023; Bamberg et al., 2007; Onwezen et al., 2013). A notable recent development is the

integration of cognitive models with goal-centred theories, such as Goal-Framing theory (Lindenberg, 2000), which account for motivations to perform a behaviour and situational factors (Ajzen & Kruglanski, 2019; Concari et al., 2023; Steg et al., 2014b).

In summary, cognitive behavioural models offer a valuable framework for identifying general factors that facilitate or hinder pro-sustainable behaviour. For example, a decision not to reduce meat consumption may stem from a negative attitude towards vegetarian foods, perceived barriers to accessing vegetarian meals, social pressure to eat meat, and the lack of a moral obligation to reduce meat intake. However, applying these models directly and as the sole basis for interventions is likely to be insufficient to change pro-sustainable behaviour significantly. Cognitive models assume that individuals either already possess favourable attitudes and norms that can be activated through information or use available information to evaluate consequences and subsequently change their attitudes or norms, thus neglecting contextual, spontaneous, and emotional factors, as well as the role of habit, past behaviour, and the dynamic nature of decision-making processes (Steg et al., 2014b). Given the limitations of the TPB and the NAM, and the complexity and contextual nature of pro-sustainable behaviour, it is beneficial to use these theories in combination with other theories and adapt them to the specific context in question, as is often done in behavioural intervention studies measuring actual behaviour. This requires the identification of the factors that are most likely to influence the specific target behaviour through pre-studies, which might involve interviews, surveys, observation, and insights from T&H providers (Nimri, 2018).

### 3.3 Goal-Framing Theory

The goal-framing theory (GFT) is influenced by Lindenberg's (2000) alternative way of extending rationality and posits that individuals respond to internal goals and external cues rather than always optimising, as assumed in classical rational choice models. According to Lindenberg (2000), all actions are framed, which influences the selection of 'good reasons' to act in a certain way (p.171). While incorporating cognitive components from theories like the TPB and the NAM, the GFT emphasises how cues in the environment can influence how people frame and process information in different contexts, thereby influencing their behavioural goals and actions (Lindenberg, 2000, 2006).

Lindenberg (2008) identified three main goal frames: normative, gain, and hedonic. Normative goals focus on acting appropriately, making situationally relevant personal and social norms cognitively more accessible, while gain goals pertain to individual benefits, and hedonic goals prioritise pleasurable experiences and short-term consequences (Foss & Lindenberg, 2013; Miao & Wei, 2013). When one of these three goals is focal for an individual, it captures many of their cognitive and motivational processes. The goal can direct several subgoals, change what preferences are salient, guide the individual's attention, shape considerations of alternatives, and influence which knowledge is drawn on when making decisions (Foss & Lindenberg, 2013), thereby affecting motivation and behaviour by impeding other goals, directing expectations about others' behaviour, and influencing judgement of goal achievement (Lindenberg, 2018). Unlike other mainstream behavioural theories, the GFT suggests that while preferences may not change situationally, the situational activation of preferences does, as does

the selective attention to benefits, opportunities, and constraints (Lindenberg & Papies, 2019).

Some studies have indicated that the normative goal frame positively influences pro-sustainable behaviour, but that this goal frame is also lowest in salience, meaning that other frames, especially the hedonic frame, easily threaten the normative goal frame's strength (Chakraborty et al., 2017; Foss & Lindenberg, 2013). To maintain focus on normative goals, people must push their hedonistic and gain-oriented goals to the background if they are not compatible with normative ones (Lindenberg, 2000). As previous studies have shown, pro-sustainable behaviours are often associated with everyday responsibilities and personal sacrifices, which may conflict with the short-term hedonic goals of consumers in T&H and, therefore, negatively impact their motivation to engage in normative-oriented pro-sustainable behaviour (Chakraborty et al., 2017; Juvan & Dolnicar, 2014b; Schwartz, 1977; Winkler-Schor et al., 2020). A similar notion is reflected in some value-related literature, suggesting that context-specific goals and values tend to emerge when people are on holiday, addressing the possible effects of multiple conflicting values on tourists' behaviour (Crick-Furman & Prentice, 2000; Passafaro & Vecchione, 2022).

Despite these challenges, the GFT recognises that individuals experience multiple goals simultaneously, which vary across tourism activities and settings, and may either conflict *or* support one other. For instance, the motivation to perform PEBs is often driven not just by environmental concerns but also by other non-environmental goals (Wang et al., 2021). Some studies have found that individuals' anticipated emotion of 'warm-glow' – a sense of satisfaction from doing something good for others – strongly influences decisions to

engage in pro-sustainable behaviour, even in T&H contexts (Alpizar et al., 2008; Malone et al., 2014; Scott et al., 2003). This suggests that hedonic goals, such as deriving pleasure from warm-glow, can support the performance of normative-oriented behaviours (Steg et al., 2014b). Furthermore, personal norms can moderate the relationship between hedonic motives and pro-sustainable behaviour. Individuals who hold personal sustainability norms may engage in pro-sustainable behaviour, even in a hedonic goal frame, because they feel morally obliged to do so, have a desire to act consistently with their norms, and are more conscious of the societal or environmental outcomes of their behaviour (Rodriguez-Sanchez et al., 2020).

However, the GFT posits that moral obligations develop only if normative goals become salient, which can be facilitated by goal-nudging interventions providing information about expectations and norms to emphasise collective effort (Kronrod et al., 2012; Lindenberg, 2008). Although the GFT has been applied in only a few studies on pro-sustainable behaviour in T&H, other studies suggest that more pro-sustainable consumer choices can be encouraged through cues that activate sustainability-related normative goals (Onwezen, 2023; Thøgersen & Alfinito, 2020; Trabandt et al., 2024). Taking this idea a step further, if the cues encountered during a T&H experience are concerned with new challenges and unknown norms, and if they are sufficiently strong and reinforced, individuals may form new preferences and behaviours (Pung et al., 2020).

Following the above, engagement in norm-related pro-sustainable behaviour may become compatible with hedonic goals due to individuals' desire to behave in line with their norms or newly formed preferences, or to experience positive emotions like warm-

glow (Malone et al., 2014). To achieve this and also ensure sustained engagement in pro-sustainable behaviour, Steg et al. (2014a) proposed that interventions should focus on strengthening normative goals, rather than circumventing them via behavioural-nudging or targeting gain or hedonic goals exclusively, as this helps to reduce the conflict between the goals. Similarly, Ballantyne et al. (2018) emphasised the normative route for fostering pro-sustainable behaviour, arguing that eliciting the appropriate value frame can prompt PEB, even among self-centred individuals.

### 3.4 Social Norms

The social norm concept is crucial in sociology and psychology and central to some of the most commonly used cognitive and psychological theories, such as the focus theory of normative conduct (Bicchieri & Xiao, 2007; Cialdini et al., 1990; Schwartz, 1977), explaining why social norm interventions are often classified as a distinct type of intervention (Bicchieri et al., 2019). Social norms, which are broadly understood as expectations or rules within a group of people that impact behaviour, emerge from collective activities and shared knowledge and practices (Mackie et al., 2015). This distinguishes them from personal norms (Schwartz & Howard, 1981).

While the ubiquity of the social norm concept has led to inconsistent terminology and understanding of their influence on behaviour (Bicchieri, 2006; Reynolds et al., 2015), scholars commonly differentiate between social norms that dictate accepted behaviour and those defining common behaviour (Bicchieri, 2006; Cialdini et al., 1990; Deutsch & Gerard, 1955). According to Cialdini (1990), these injunctive norms represent 'rules or beliefs as to what constitutes morally approved and disapproved conduct', and descriptive norms,



describing what behaviour is typical or normal providing evidence for what will likely be effective action (p. 1015). Furthermore, Deutsch and Gerard (1955) differentiated between normative and informational social influence. Normative influence reflects the need to conform to others' expectations, driven by the desire for social rewards like approval, and is concerned with public behaviour. On the other hand, informational influence or 'social proof' suggests that a person accepts others' expectations individually to make more informed choices, especially in situations of uncertainty (Deutsch & Gerard, 1955).

The distinction between social influences, particularly the influence of injunctive and descriptive norms, is not always clear, as providing empirical information about common behaviour often leads people to conclude that the behaviour is approved of, which influences its prevalence (Bicchieri & Dimant, 2019; Burchell et al., 2013). Bacharach (2006) combined these influences in his 'I-reasoning' and 'We-reasoning' propositions, which are concerned with self- and group-oriented behaviour, suggesting that people shift from selfish behaviour to group-oriented behaviour if they believe others contribute to *and* expect everyone else to contribute. Additionally, group objectives need to relate to personal ones to achieve this shift in individuals (Bacharach, 2006; Tajfel, 1979; White & Simpson, 2013).

Given that social norms are often perceived instructions about common behaviour rather than actual behaviour, the term 'subjective norms' is sometimes used (Fishbein & Ajzen, 1975; Tankard & Paluck, 2016). This distinction is relevant in behavioural interventions, which aim to activate or alter individuals' subjective norms to induce changes in actual norms. Apart from targeting specific descriptive and injunctive norms, this may involve targeting social norms that

are widely shared, but that are to varying degrees internalised by individuals and not necessarily acted upon, such as social responsibility, reciprocity, and fairness (see also conditional cooperation (Fehr & Schurtenberger, 2018), Equity Theory (Adams, 1963), and Social Exchange Theory (for a review, see, e.g., Cropanzano & Mitchell, 2005)<sup>2</sup>).

### 3.5 Cognitive Dissonance and Rationalisation Strategies

Festinger's (1957) cognitive dissonance theory is highly relevant for understanding the attitude-behaviour gap, but seldom explicitly acknowledged in pro-sustainable tourism research (Juvan & Dolnicar, 2014b; Schrem & Upham, 2020). According to Festinger (1957), people intrinsically strive for consistency between their behaviours and their strongly held beliefs and values and experience psychological discomfort when discrepancies arise between 'cognitions (attitudes, beliefs, values, opinions, knowledge) about themselves, about their behaviour, and their surroundings' (p. 9).

To resolve this discomfort, people may either adjust their behaviour to fit their beliefs or modify their beliefs to rationalise the situation

<sup>2</sup> Conditional Cooperation, Equity Theory, and Social Exchange Theory address how individuals' perceptions of fairness and reciprocity influence their willingness to cooperate in social contexts. Conditional cooperation refers to individuals' willingness to contribute to a collective effort based on others' contributions, proposing that people are more likely to cooperate if they see others doing the same. Equity Theory focuses on fairness in social exchange, suggesting that individuals seek to maintain balanced ratios of input and output in their relationships. If this ratio is perceived as unfair, individuals adjust their level of input or rationalise the situation to achieve equity. Social Exchange Theory posits that social interactions are based on the exchange of resources, where individuals seek to maximise benefits and minimise costs. Thus, the theories highlight the human desire for fair treatment and the motivation to act based on the perceived or expected actions of others in a given context.

and fit their behaviour. Among other things, this depends on the costs of the behaviour (Diekmann & Preisendörfer, 2003; Steg et al., 2014b). For instance, a habitual meat-eating consumer might seek information about the benefits of eating meat or other pro-sustainable behaviours to justify their meat consumption. Alternatively, after learning about the unsustainable nature of meat options, individuals may refrain from eating meat when the costs – whether monetary, temporal, or effort-related – are sufficiently low in the given setting (Diekmann & Preisendörfer, 2003). This is more likely if the behaviour aligns with efficacy beliefs, regarding both outcome- and self-efficacy, leaving less room for rationalisation. For example, a decision to abstain from eating meat for environmental reasons is fostered by a strong belief in the link between meat consumption and environmental harm (Lindenberg, 2023). Similarly, the premise that individuals seek to resolve internal discomfort aligns with prominent interpersonal theories like Equity Theory (Adams, 1963), where discomfort arises from perceived inequities in relationships rather than from conflicting beliefs or attitudes.

Recent studies on actual behaviour, as opposed to intentions, suggest that environmentally aware tourists often prioritise consistency by adjusting beliefs rather than changing their behaviour (Dolnicar et al., 2017, 2019). This can involve the adoption of different rationalisation strategies, expressed through the reasons tourists state for not engaging in pro-sustainable behaviour while on holiday (Juvan & Dolnicar, 2021). A prevalent rationalisation strategy in sustainable consumption and tourism is moral licensing (Xu et al., 2020), which is also known as self-licensing, negative spillovers (Wang et al., 2023), single-action bias (Zhao & Luo, 2021), contribution ethic (Nayum & Thøgersen, 2022), or compensatory beliefs (Capstick et al., 2019).

Moral licensing is a psychological phenomenon wherein individuals feel entitled to engage in less virtuous behaviour because they believe they have previously acted morally. They perceive that they deserve a 'break' from their usual effortful behaviour, having already done their fair share (Gifford, 2011; Truelove et al., 2016). While few empirical studies have explored how moral licensing affects cross-contextual spillover of pro-sustainable behaviour (Nayum & Thøgersen, 2022; Wang et al., 2023), several studies on the attitude-behaviour gap show that environmentally aware individuals tend to view their holidays as a break from regular pro-sustainable behaviour (Barr et al., 2011; Juvan & Dolnicar, 2021; Schrem & Upham, 2020). Similarly, in the context of out-of-home food consumption, consumers who reduce meat consumption at home may be less inclined to choose explicitly labelled vegetarian options in restaurants (Bacon & Krpan, 2018; Hielkema & Lund, 2022).

A related rationalisation strategy is to deny responsibility, as postulated in Attribution Theory (Heider, 1958) and concepts of behavioural control (Ajzen, 1985; Schwartz, 1977). Attribution Theory suggests that people explain events either as being caused internally (dispositional) or by external factors out of their control (situational). For instance, Juvan et al. (2016) found that some environmentally concerned tourist segments attribute responsibility and the ability to make a difference to governments and T&H providers or feel they lack control in reducing environmental harm during holidays due to insufficient information. Schrems and Upham (2020) found that sustainability academics use justifications such as denial of control, denial of responsibility, and moral licensing to reconcile the disjunction between their sustainability knowledge, pro-environmental attitudes, and flight behaviour. To address cognitive

dissonance and promote behavioural change, interventions might focus on relevant rationalisation strategies, such as shifting external to internal attribution, highlighting that the behaviour has sustainability impacts similar to those at home, and emphasising that others are also making efforts (Juvan & Dolnicar, 2021).

Notably, while the literature often suggests that tourists rationalise their unsustainable behaviour rather than changing it, some research indicates that, under certain conditions, tourists do change their behaviour in alignment with attitudes. In a conceptual study, Pung et al. (2020) proposed that intense stimuli during tourism experiences – including those not specifically aimed at sustainability, like eco-tourism – can prompt changes in both cognition and behaviour. The authors argued that when tourists recognise the intensity of their reactions, the incongruence between self-concept and behaviour may prompt reflection and a reinterpretation of values, which can drive behavioural change. The intensity of these stimuli is subjective and contextual, suggesting that responses to behavioural interventions vary based on personal norms and the specific tourism context.

### 3.6 Backfiring and Reactance

In order to gain comprehensive insights into pro-sustainable behaviour and mitigate counterproductive results, it is necessary to understand why interventions may not always produce the desired outcomes and may instead lead to unintended effects. Various contextual and psychological factors can contribute to unintended effects (Bicchieri & Dimant, 2019; Brough et al., 2020), which may manifest as negative side effects offsetting the intervention effect (Spillover/halo effects), later behaviour counteracting the intervention

effect (moral licensing), or even ‘backfiring’, where the intervention causes the opposite of the intended behaviour (Osman et al., 2021).

Negative and positive spillover effects have been found between PEBs in general (Meijers et al., 2015; Nash et al., 2017; Nilsson et al., 2017; Truelove et al., 2014) and contextually between PEBs at home and in a T&H setting (Xu et al., 2020). These findings suggest that factors such as environmental identity and moral licensing beliefs influence spillover. However, research on spillover effects from behavioural interventions is limited (Banerjee, 2021; Colmsjö et al., 2022). Although measuring spillover effects is beyond the scope of this thesis, they can affect the net impact of interventions over time and should thus be considered in intervention design (Taplin et al., 2022; Xu et al., 2020).

Regarding backfiring, a psychological term commonly associated with such effects in the broad context of persuasive messages is reactance (Griesoph et al., 2021; Ji et al., 2023; Richter et al., 2018). Reactance refers to an unpleasant motivational arousal to persuasion, specifically to having one’s behaviour or beliefs manipulated (Brehm, 1966). In other words, reactance means that making normatively desirable but unpopular recommendations can be counterproductive (Fitzsimons & Lehmann, 2004, p.92). The reactance effect has been observed in various behavioural interventions (Osman, 2020), especially in health and PEB settings (e.g., Brough et al., 2020; Bruns & Perino, 2021; Mols et al., 2015), highlighting several potential psychological reasons. In line with reciprocity and social exchange theories, one trigger in the context of sustainability appeals may be a perceived imbalance in benefits and costs, such as effort, where the credibility and sustainability commitment of the organisation requesting engagement play a crucial role (Kim & Kim, 2014; Wang et

al., 2017; Warren et al., 2017). This point emphasises the importance of perceived social norms regarding both the contributions of fellow consumers in addressing sustainability problems and the actions of providers.

Furthermore, aligned with cognitive dissonance theory, perceived obtrusive messages can induce psychological costs like annoyance and guilt, which may counteract intrinsic benefits like warm glow (Cialdini & Goldstein, 2004; Damgaard & Gravert, 2018; Festinger, 1957). Therefore, while the use of interventions like prompts can be useful for reducing forgetfulness, it requires careful implementation to avoid imposing moral costs if they draw excessive attention to decisions that the decision-maker prefers to avoid (Damgaard & Gravert, 2018; Edenbrandt et al., 2021). Similarly, assertive environmental messages urging consumers to change their behaviour may backfire by infringing on perceived freedom of choice (Font & McCabe, 2017; Kronrod et al., 2012; Trabandt et al., 2024).

In T&H contexts, certain psychological levers might trigger backfiring effects despite their effectiveness in other settings. For example, while people often pay more attention to negative information due to negativity bias, this effect is unlikely to work well in an industry catering to consumers who are seeking relaxation and enjoyment (Ji et al., 2023; Nieto-García et al., 2024; Souza-Neto et al., 2022). Thus, backfiring needs to be considered not only in terms of adverse effects on the targeted behaviour but also on consumers' experiences, which can impact the providers' image and revenue (Trabandt et al., 2024).

Notably, Banerjee et al.'s (2022) online study on sustainable eating found that backfiring effects may diminish over time when accounting for individuals' long-term motivations. This finding

suggests that initial reactance or cognitive dissonance should not necessarily deter intervention implementers, as such reactions can sometimes be necessary for transforming perspectives if reflection is incorporated into the intervention (Bruns & Perino, 2021).

### 3.7 Theoretical Framework Summary

As highlighted in the review of the literature and behavioural theories, various environmental, psychological, and social factors influence pro-sustainable behaviour. The influence of these factors, in terms of their strength and whether they drive or hinder pro-sustainable behaviour, differs across contexts, as does their relationship with each other. Despite increasing research, the review shows that knowledge gaps remain regarding the behavioural drivers and barriers of different pro-sustainable behaviours among T&H consumers, such as social-oriented behaviours like donations for public goods and climate-friendly food choices, across diverse T&H settings, including recreational outdoor contexts and à la carte restaurants (Abrahamse, 2021; Demeter et al., 2023; Greene et al., 2023; Li et al., 2023). Addressing these gaps is central to RQ1 (*What are the drivers and barriers to pro-sustainable consumer behaviour in T&H?*) and important for advancing the understanding of pro-sustainable consumer behaviour in T&H.

To tackle this issue, previous sections have identified some key factors influencing pro-sustainable behaviour in T&H, providing a basis for studying the drivers and barriers to the target behaviours in this thesis. These factors are summarised in Figure 3 below. The figure does not aim to present an exhaustive list of influencing factors and their interactions, but it does serve as a starting point for identifying those factors that may drive or impede pro-sustainable



behaviour in the contexts studied. These factors can then be targeted in behavioural interventions, addressing RQ3: *How can behavioural interventions be designed to encourage pro-sustainable consumer behaviours in tourism and hospitality?* Accordingly, broader institutional factors, socio-demographic factors, and internal factors like habit and personality traits – while influential in pro-sustainable behaviour in general – are excluded from Figure 3 because they are difficult to measure and target within the temporally limited T&H contexts of this thesis.

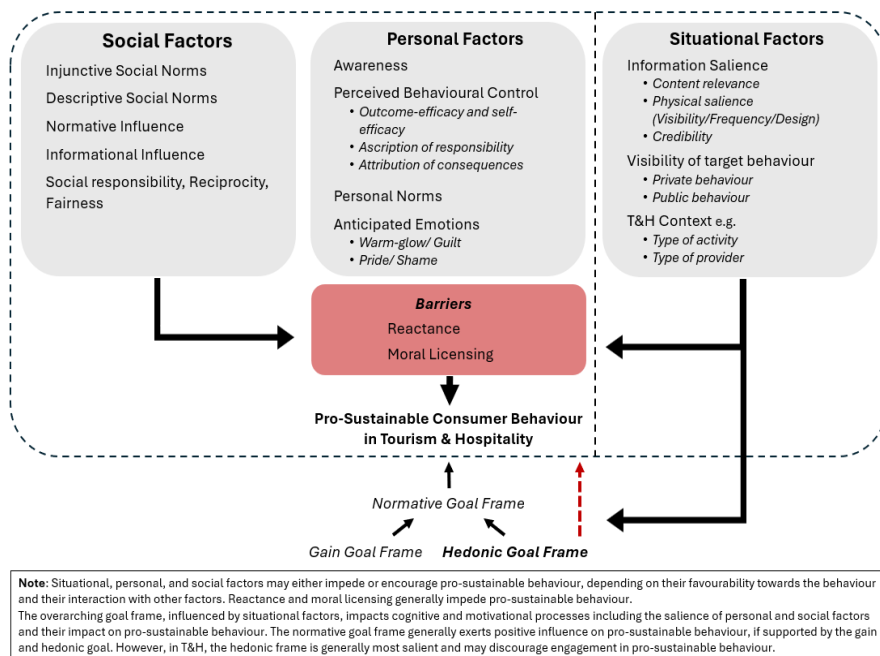


Figure 3: Factors influencing pro-sustainable consumer behaviour in tourism and hospitality.

The division into situational, personal, and social factors is inspired by the preceding review of behavioural theories, along with existing reviews (Li et al., 2023; Testa et al., 2021) and frameworks on pro-sustainable behaviour (Kollmuss & Agyeman, 2002; Steg et al., 2014a;

Testa et al., 2021). This division highlights that different aspects of an individual's environment and psychology influence behaviour while providing a structure for understanding and analysing the drivers and barriers to pro-sustainable behaviour in this thesis.

The goal-frames (Lindenberg, 2000, 2006; Lindenberg & Steg, 2007) are displayed at the outer layer. This indicates how different overarching goals, influenced by environmental cues such as those listed under situational factors, impact the salience of personal and social factors and how these are processed and prioritised. In T&H settings, the hedonic goal frame is generally the most salient and may discourage engagement in pro-sustainable behaviour if it conflicts with the behaviour, indicated by the red arrow. The normative goal frame typically influences pro-sustainable behaviour positively if it is supported by hedonic and gain goals and can be triggered by environmental cues such as behavioural interventions (Lindenberg & Steg, 2007).

While Figure 3 does not illustrate all possible interaction effects, due to their inherent complexity and variability, the interaction among situational, personal, and social factors can either encourage or impede pro-sustainable behaviour. With regard to situational factors, information salience, visibility of target behaviour (private vs. public), type of activity, and type of provider play a crucial role in shaping behaviour within specific T&H contexts. These factors can act as immediate cues that influence an individual's goal frames and, with personal and social factors amplifying or diminishing their effects, influence behaviour (Lindenberg & Steg, 2007). Thus, understanding situational factors makes it possible to design interventions tailored to the specific context, making them more relevant and reducing the risks of backfiring. For instance, when pro-

sustainable behaviour is private, visible descriptive information about the behaviour of others can leverage social norms to encourage pro-sustainable behaviour (Bicchieri & Dimant, 2019).

Personal factors are directly related to individual decision-making processes. Although personal attitudes play a significant role in pro-sustainable behaviour, they are excluded from this framework due to their complexity and broad range of associated constructs. Attitudes often involve multiple, interrelated constructs, and the literature has identified several general intervening factors that contribute to the attitude–behaviour gap (Passafaro, 2019). For instance, personal norms might include aspects of attitudes toward the behaviour, reflecting one’s views on what is considered right or wrong. Thus, to avoid the complexity and potential conflict inherent in general attitudes, this framework focuses on more specific factors, which can be targeted more concretely, such as awareness, personal norms, and perceived behavioural control (linked in this framework to efficacy beliefs, ascription of responsibility and attribution of consequences). As emphasised in the literature (e.g., Steg et al., 2014a; Testa et al., 2021) and in frameworks such as the TPB (Ajzen, 2012) and NAM (Schwartz, 1977), these factors can drive pro-sustainable behaviour if they are favourable to that behaviour.

Anticipated emotions are also included, as they motivate behaviour by driving individuals to seek positive feelings and avoid negative ones (Antonetti & Maklan, 2014; Steg et al., 2014b). On a personal level, individuals may be motivated by the anticipated warm glow when making pro-sustainable choices or by avoiding the guilt of unsustainable choices, while social norms can evoke emotions like pride or shame (Onwezen et al., 2013; Sirieix et al., 2017). In experiential contexts like T&H, such consideration of emotions is

crucial for designing interventions that not only promote pro-sustainable behaviour but also enhance the consumer experience.

The social factors reiterate the influence of social norms and expectations prevalent in decision-making settings. Injunctive social norms, descriptive social norms, social responsibility, reciprocity, and fairness can all motivate pro-sustainable behaviour through social influence and perceived social expectations of other consumers and providers (Bicchieri, 2006; Burger et al., 2008; White & Simpson, 2013).

Reactance and moral licensing can present significant barriers to pro-sustainable behaviour (Brehm, 1966; Osman, 2020; Xu et al., 2020), with their impacts varying according to individual tendencies and the influence of situational, personal, and social factors (Osman, 2020; Wang et al., 2023). For example, perceived behavioural control can influence reactance if people feel the targeted behaviour is too inconvenient, while social norms can reduce moral licensing by highlighting that collective engagement in the specific pro-sustainable behaviour is expected and common. Identifying these barriers within this framework highlights challenges that need to be addressed to ensure targeted interventions and avoid backfiring effects.

Given the complexity and context-specific nature of pro-sustainable behaviour in T&H, we must examine the drivers and barriers to such behaviour in real-life settings. I do this through field experiments that test behavioural interventions in collaboration with T&H providers, as outlined in Chapter 4.

## 4 Material and Methods

With the aim of studying pro-sustainable consumer behaviour in T&H settings, enhancing knowledge in the field, and providing practical recommendations on behavioural intervention design, this research undertakes a mixed methods field experimental approach with a pragmatic paradigmatic stance. To date, mixed methods have been applied in a small number of sustainable T&H research articles (Li et al., 2023; Molina-Azorín & Font, 2015) but the growing advocacy for this approach among researchers emphasises its potential to advance knowledge in this field (Dwyer et al., 2008; Jennings, 2001; Molina-Azorín & Font, 2015; Nunkoo, 2018). The central argument for employing mixed methods lies in the belief that the combination of qualitative and quantitative methods within a single study can overcome their individual limitations (Creswell & Plano Clark, 2017; Prayag, 2018), offering a more comprehensive understanding of multifaceted research problems such as pro-sustainable behaviour in T&H. This approach is especially pertinent given the divergence in the existing literature between quantitative surveys indicating a demand for sustainable offerings (e.g., Bollani et al., 2019; Dolnicar et al., 2008; Feucht & Zander, 2018), and qualitative studies suggesting that T&H consumers frequently act in their own interest (Juvan & Dolnicar, 2014b; Miller et al., 2010).

Hence, a mixed methods approach is deemed necessary to strike a balance in understanding the drivers and barriers to pro-sustainable behaviour. Moreover, mixed methods can facilitate collaboration between stakeholders and foster social change, which are essential aspects in promoting more sustainable T&H consumption in practice (Molina-Azorín & Font, 2015). Although field experiments are generally considered quantitative in nature, they offer a means of

gathering both quantitative and qualitative data in real-world settings (Paluck, 2010). This integration of methods within a single study, along with the emphasis on practical research relevance and utility, embodies a pragmatism approach.

The following sections outline my methodological and epistemological positioning in pragmatism and how this informed the use of mixed methods and field experiments. The pragmatic mixed methods field experimental approach is consistent across the individual papers contributing to this thesis and, to the best of my knowledge, a novel approach within the field. The specific research designs, including the use of qualitative and quantitative methods, differ between the papers, as elaborated on in the subsequent sections. The chapter concludes with a discussion of the limitations and ethical considerations associated with the research design.

## 4.1 Mixed Methods, Pragmatism, and Behavioural Economics

There is an ongoing debate about whether mixed methods should be considered a method of inquiry, or a methodology (Prayag, 2018; Tashakkori & Teddlie, 2003). However, the perspective that different methods are combined to enhance each other and facilitate theory development positions mixed methods as a distinct methodological movement, going beyond the methods themselves (Feilzer, 2010; Molina-Azorín & Font, 2015). In this context, pragmatism is commonly associated with mixed methods, offering different assumptions than positivism, post-positivism, and constructivism, by prioritising flexibility, practicality, and the generation of actionable knowledge that can inform decision-making and practice (Feilzer, 2010; Tashakkori & Teddlie, 2003). This provides a valuable

foundation for understanding the use of behavioural economics, which I view as a lens for studying pro-sustainable behaviour (Hallsworth, 2022). Although the behavioural economics approach is often individualistic and predictive, it benefits from the insights of pragmatist philosophers, who offer a more holistic understanding of behaviour by considering the dynamic interplay between individuals and their environment (Dewey, 1939, 1983; Garcés, 2022; Hiller & Woodall, 2018). Such a perspective enables the study of interventions focussing on the decision-making environment to influence individuals' responses (Halpern, 2015).

While the pragmatism paradigm aligns with behavioural economics approaches in many aspects, there are also noteworthy differences. Proponents of behavioural interventions, particularly nudges, assume that it is possible to pre-determine the difference between favourable and unfavourable behavioural interventions and outcomes through expertise in psychology and economic behaviour. In contrast, pragmatists caution against assuming such predictability and emphasise the importance of collaborative efforts for long-term democratic social change (Garcés, 2022; Pedwell, 2017). I view these approaches as complementary, acknowledging that while behavioural economics offers useful insights into individual behaviour and influencing factors, interventions need to be assessed and adapted based on the dynamic interaction between individuals and their natural and social surroundings. Consumers' experiences are not viewed as isolated events but as continuous interactions with their environment, including other consumers and providers, thereby carrying broader ethical implications and impacts on society and the environment.

Ontologically, pragmatism accepts singular and multiple realities that are inherently dynamic and context-dependent (Creswell & Plano Clark, 2017; Feilzer, 2010), emphasising the importance of exploring phenomena within their practical contexts. This ontological perspective aligns with the complexity of studying pro-sustainable behaviour in T&H, recognising that behaviour is influenced by a multitude of factors that may vary across different settings and circumstances (Hiller & Woodall, 2018; Johnson & Onwuegbuzie, 2004).

Regarding the epistemological nature of pragmatism, which is concerned with assumptions about what can be known and how to go about such knowing (Morgan, 2007), different layers of pro-sustainable behaviour can be measured using both qualitative and quantitative methods. The aim is not just to present an accurate account of how phenomena occur and what influences them, but also to understand how this knowledge is useful (Rorty, 1991). The notion of utility – meaning why, what, and for whom the research is useful – calls for reflexive research practice involving communication and shared meaning-making with tourism stakeholders and other researchers. As such, the sustainability problem, selection of theories, concepts, target behaviour, interventions, and methods employed in this thesis are considered within the spatial and temporal context of the destination and provision setting of the cases.

The selection of cases stems from their applicability to my research interest and thesis aim, as well as my involvement in two larger research projects and the practicalities associated with them. Thus, I followed a purposeful, instrumental case selection approach, aiming to enhance previous findings by applying existing theories in underexplored settings (Simons, 2009). The two cases – donations for



mountain biking (MTB) trails in Rörbäcksnäs, Dalarna, and climate-friendly food choices in restaurants in Sälen, Dalarna, and Stockholm – both address key sustainability issues in Sweden and the wider T&H industry. They also have fundamental differences, which allows for comparison and the use of different theories. Consequently, the findings gathered in my research differ from current studies in T&H or consumer behaviour literature, offering novel insights into pro-sustainable behaviour in T&H while adding to behavioural economics literature. Table 2 below outlines the key characteristics of each case, highlighting the unique features that differentiate them and contribute to addressing the research questions and overarching aim of this thesis. The literature reviews conducted before data collection in each case assisted in refining the research questions for my papers, aligning with the overall research aim.

Despite the inherent limitations in the generalisability of small local studies, such as those in my research, these constraints also yield advantages, particularly with regard to navigating the complexity of pro-sustainable behaviour. The selected cases offer insights into the structures and processes governing the provision and consumption of resources related to the target behaviour. This aids in the nuanced interpretation through close collaboration with local stakeholders, enhancing the practical utility and meaningfulness of the research, which is challenging with generalised, context-free approaches (Feilzer, 2010).

Based on the selected cases and the research aim, I selected an approach that best suited overall data collection and analysis: mixed-method field experimental research. The specific design is adapted to the cases, as outlined in the following sections.

Table 2: Key case characteristics

<b>Comparative dimension</b>	<b>Case 1: Donations for MTB trails</b> <i>Papers 1 and 2</i>	<b>Case 2: Climate-friendly food choices</b> <i>Papers 3 and 4</i>
<i>Setting</i>	Rural village (Rörbäcksnäs, Dalarna, Sweden)	Popular winter destination (Sälen, Dalarna, Sweden), Capital city (Stockholm, Sweden)
<i>Primary sustainability challenge</i>	Funding for trail development and management	Reducing climate impact through food choices
<i>Target behaviour</i>	Donations for trail upkeep	Climate-friendly food choices
<i>Sustainability consequences</i>	Positively contributes to the destination's sustainability	Reduces negative impacts on the sustainability of the destination and planet at large
<i>Sustainability dimension</i>	Primarily concerned with social/economic sustainability	Primarily concerned with environmental sustainability
<i>Impact on common resources</i>	Direct consumption of common resources (nature, trails)	Indirect consumption of common resources (resources involved in the food production and consumption process)
<i>Type of provision</i>	Uncommercial, open-access setting	Commercial (restaurant) setting
<i>Touchpoint with providers</i>	Indirect	Direct
<i>Number of choices</i>	One choice (to donate or not)	Variety of choices (on the menu)
<i>Monetary costs associated with the behaviour</i>	Freedom to choose the monetary amount	No freedom to choose the monetary amount

<b>Main stakeholders involved in T&amp;H provision</b>	Local MTB enthusiasts, sports association	Restaurant owners, managers, and staff
<b>Broader Implications</b>	Applicability to challenges in funding public goods (particularly open-access nature-based tourism infrastructure)	Relevance for hospitality providers and consumer behaviour change

## 4.2 Field Experiments

Despite the increasing use of experimental methods in T&H, experiments (and especially field experiments) still constitute a minority of studies in the field (Fong et al., 2016, 2020; Sun et al., 2019). Viglia and Dolnicar (2020) noted that fewer than 8 per cent of articles in the *Annals of Tourism Research* in 2018 used experiments as the main method, indicating a notable gap in the application of this method compared to survey-based association studies. Furthermore, a recent survey revealed that only 30.5 per cent of editorial board members of leading T&H journals considered themselves very knowledgeable about the experimental method, but 60 per cent expressed a desire for increased experimental studies for knowledge development and theory building (Leung et al., 2023).

Adopting an effect- and outcome-oriented pragmatic view, field experiments lend themselves as methods for exploring and testing the drivers and barriers to pro-sustainable behaviour in T&H through interventions. In the natural field experiments applied in my research, the naturally occurring behaviour of subjects is measured without the

subjects being aware that they are part of an experiment (Harrison & List, 2009; Lynn & Lynn, 2003).

This pragmatic approach facilitates inquiry into causal effects beyond correlations, which is a crucial distinction from traditional non-experimental methods (Mattila et al., 2021). Specifically, field experiments offer a unique advantage in terms of assessing subliminal influences on behaviour, such as framing or social norms (Ngan et al., 2022). This makes it possible to identify the conditions that influence (un)sustainable behaviours, contributing to a nuanced understanding (Thomlinson, 2018). While the level of causation is greater the closer the experiment is to a true experiment, conducting experiments in real-life contexts enhances ecological validity, which aligns with my focus on solving real-life problems to create practically applicable knowledge (Bausell, 2015; Sørensen et al., 2010). Accordingly, while the core aim of my field experiments is to identify regularities related to drivers and barriers to pro-sustainable behaviour, a pragmatic view acknowledges their situational nature, recognising the unpredictability of human behaviour (Feilzer, 2010; Hiller & Woodall, 2018; Mounce, 1997). For example, in my first paper, social norms emerged as key drivers for donation behaviour. While this seems to follow a relatively stable pattern, it is subject to unpredictable influences and the dynamic nature of social norms. This point underscores the need for reflection, abductive reasoning, and potential rethinking of research methods and theories throughout the process.

Although my main method – collecting behavioural data in field experiments – is quantitative in order to gain insights into the behaviours of the majority of subjects, qualitative methods address limitations associated with claims of causality and inform

quantitative approaches (Paluck, 2010). The following section outlines the research design, including the qualitative methods employed, followed by a description of the quantitative methods used in the experiments.

### 4.3 Research Design

The predominant mixed methods design I applied in each experimental study is a sequential exploratory design (qual→QUAN), where the dominant quantitative method is implemented sequentially after the qualitative method (Morse, 2003; Prayag, 2018). Qualitative methods in the form of stakeholder interviews (Paper 1), stakeholder workshops (Paper 3) and customer interviews (Paper 4) were used in the exploratory pre-studies to understand the sustainability problem at the destination, identify the target behaviour and providers' opportunities and challenges related to this, develop context-relevant interventions, and inform appropriate measuring instruments, contributing to answering RQ2 and RQ3. Additionally, observation (Papers 1, 2, and 4) and interviews (Paper 4) were used throughout the field experiment to support the quantitative findings. In turn, the main purpose of quantitative methods was to systematically measure and analyse the behaviour of consumers in response to interventions (RQ1 and RQ3). The methods are detailed in the following sections. The research design for individual papers and the overall thesis is shown in Figure 4.

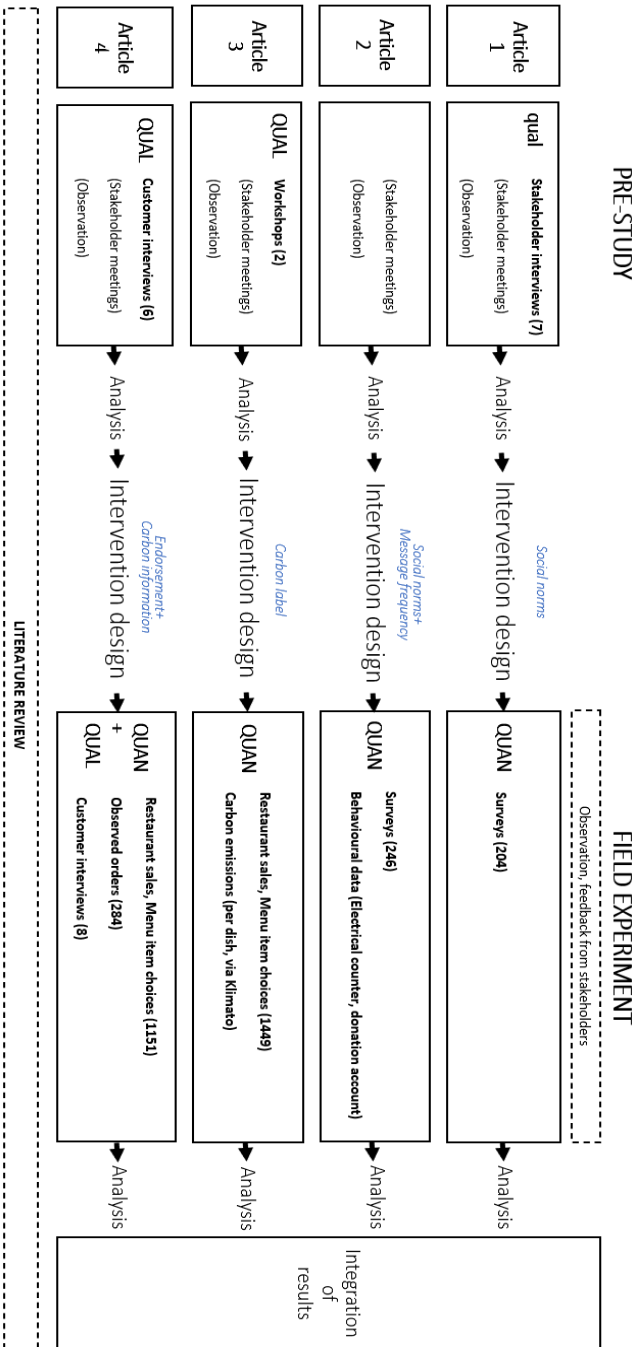


Figure 4: Research design of this thesis

## 4.3.1 Qualitative Methods

### Case 1 – Papers 1 and 2

The two papers in my first case were part of the ‘Innovative business models for sustainable nature-based tourism via Gamification and Nudge (INNature)’ research project, funded by Dalarna University and Visit Dalarna. The project aimed to find funding models for the management of recreational trails, such as mountain biking (MTB) trails, that are subject to the right of public access (*Allemansrätt* in Swedish)<sup>3</sup>. Some initial contact had been made with the Rörbäcksnäs community in the Dalarna county, where MTB trails and facilities are managed voluntarily by local MTB enthusiasts and the non-profit sports association Rörbäcksnäs Idrottsällskap, which relies on donations collected via Swish.<sup>4</sup> Despite displaying a QR code for Swish donations at the main trail entrance, along with basic information, initial project meetings with community members revealed insufficient funds to keep up with increased numbers of trail users and develop tourism for socio-economic benefits for the community. While I had a tentative idea of the sustainability

<sup>3</sup> The Right of Public Access presents a distinct land use and access regime in Sweden and other Scandinavian countries such as Finland and Norway. By granting everyone the right to access public and private lands for recreation (camping, foraging, boating, etc.) provided they respect certain guidelines and principles, the Right of Public Access in Sweden is much more extensive compared to many other countries. Considered a fundamental right that allows people to connect with nature and enjoy outdoor activities responsibly, the Right of Public Access is deeply ingrained in Scandinavian culture (see, e.g., Kaltenborn et al., 2001; Sandell, 2006; Sandell & Fredman, 2010 for overviews and discussions in the context of sustainable tourism and outdoor recreation).

<sup>4</sup> Swish is a popular mobile payment service in Sweden that allows users to transfer money between bank accounts in real time using their mobile phones (see <https://www.swish.nu/about-swish>).

challenge and problematic behaviour (visitor donations) a qualitative pre-study was necessary to align my interpretations with stakeholders' views and explore potential interventions.

Before the first experiment (Paper 1), I participated in meetings with the local community group to gain an initial introduction to the stakeholders, their aim in the project, and potential ideas for a study. In terms of qualitative methods, I then conducted seven interviews with key stakeholders of MTB trails in Rörbäcksnäs, including members of the Rörbäcksnäs sports association, the bike rental, and landowners. This allowed me to grasp the funding challenge, understand Rörbäcksnäs as a small community-based nature destination, and establish trust with stakeholders.

The individual semi-structured Zoom or phone interviews lasted 20-40 minutes. Interview questions concerned perceived barriers and drivers of MTB trail development, the current funding system, perceptions of Rörbäcksnäs as a tourism destination, and practical aspects of trail management. I identified common themes and reconciled them in a second meeting with the community group and another researcher, revealing that donations remained the preferred funding model but were insufficient for further development. I then designed an intervention based on a focused literature review on psychological theories and interventions in donation contexts and further meetings with stakeholders. Rather than testing one specific theory, I combined insights from different theories like the NAM (Schwartz, 1977), TPB (Ajzen, 1985) and Attribution Theory (Heider, 1958) to test the influence of relevant, common aspects (particularly social norms) on the pro-sustainable behaviour of tourists in this setting.



The interviews and meetings not only delineated the sustainability issue and informed the intervention but also influenced survey design and practical implementation of the experiment (for example, by identifying relevant questions), and the most suitable time and place for survey collection and intervention implementation. Continuous communication with stakeholders during the study enabled me to address their wishes and concerns, ensuring their commitment. In the second experiment (Paper 2) the following year, the pre-study only involved stakeholder meetings and no formal collection of qualitative data through interviews, due to my familiarity with the context.

Papers 1 and 2 also incorporated concurrent qualitative data collection alongside the quantitative phase, including an open-ended question in the survey and conducting field observations. Blending in with MTB visitors during the observation allowed me to gain first-hand insights into the natural interactions and dynamics of the visitors, providing a deeper understanding of their behaviour in their actual environment. This approach helped to minimise observer influence, which is critical for accurately interpreting the context of the target behaviour (Williams, 2008). The aim of combining these observations with the open-ended questions was to identify unexpected events or variables that could influence visitors' behaviour and the intervention's effect.

### **Case 2 – Papers 3 and 4**

The two papers in my second case are related to a research project funded by the R&D Fund of the Swedish Tourism & Hospitality Industry (BFUF), Dalarna University, and Destination Sälenfjällen. The project, which I was directly involved in applying for, aimed to

address the T&H industry's contribution to reducing climate impact, focusing on food choices in the T&H sector in Sweden. Addressing the broader sustainability challenge of climate change, a qualitative pre-study was imperative to contextualise the issue within the specific restaurants and identify suitable interventions.

Despite adopting a similar sequential exploratory design, the pre-study in this case employed different methods and held more significance in addressing the research questions than my initial two papers. This decision was influenced by contextual disparities. Pro-sustainable food consumption, being a multifaceted issue, involves diverse stakeholders with varying perspectives and influences on the problem (Post & Mikkola, 2012). As restaurants are commercial businesses, concerns about profit and business image differ, as does stakeholders' flexibility in implementing the experiment alongside their usual operation. Moreover, I realised that the initial exploratory phase often goes unreported in journals (Mason et al., 2010), which limits insights into the challenges and opportunities associated with intervention design and field experiments in the industry.

Study 3 was conducted in Sälen's Högfjällshotell (Dalarna, Sweden) – specifically its burger and pizza restaurant, Leffe's – due to the project's industry partners and its status as Sweden's top winter tourism destination (Heldt et al., 2021), making it a significant contributor to the industry's emissions. This specific restaurant was chosen because our first meetings with stakeholders identified it as suitable for practically carrying out a carbon label field experiment. Workshops based on principles from Open Space and Design Thinking were employed to delineate the issue of pro-sustainable food consumption, devise suitable interventions, and underscore the practical significance of the study.

Design Thinking is a human-centred, iterative approach to problem solving that enables an empathic, pluralistic understanding of problems by involving the views of different stakeholders and tools like sketches, posters, and Post-it notes (Carlgren et al., 2016; Hoolohan & Browne, 2020). Similarly, Open Space workshops involve open discussions among groups of people, allowing them to gain ownership of an issue and develop solutions (Owen, 1995). Although this workshop format is underexplored in sustainability-oriented intervention design in T&H, it is well-suited for change work requiring joint effort (Hoolohan & Browne, 2020; Lub et al., 2016) and offered valuable insights (reported in Paper 3), contributing to a detailed exploration of RQ2 and RQ3.

Two workshops (W1, October 2021; W2, February 2022) were conducted, involving three researchers, restaurant staff, and managers in Sälen. The main contact person for the project, the operations manager at Sälen's largest hotel Högfjällshotell, served as a gatekeeper to invite relevant participants for the workshops. W1 aimed to define the meaning of climate-friendly food for restaurant staff, while W2 focused on practical interventions for field experiments. The Open Space format allowed participants to express thoughts freely, guided by curiosity and intrinsic motivation. As facilitators and observers, we documented discussions and collected data to understand challenges, possibilities, and practitioner perspectives (Hoolohan & Browne, 2020; Owen, 1995).

Beyond enhancing our understanding of the challenges associated with promoting climate-friendly food choices among tourists in Sälen and exploring practical experiment implementations, the workshops effectively communicated the experimental approach and its requirements to practitioners. This facilitated an appreciation of the

study's practical significance for participants, engendering interest and commitment.

The resulting intervention was a carbon label, designed using Klimato, a Stockholm-based carbon-calculator tool that has been increasingly adopted by food service providers in Europe (Klimato, 2024). The insights and concerns of the restaurant stakeholders, as identified in the workshops and by the founders of the carbon-calculator tool, were influential in the final design.

While concurrent qualitative data collection was initially planned during the experiment, unforeseen circumstances disrupted this plan. Changes in staff, illnesses, and a surge in visitor numbers, compounded by the logistical challenge of travel for me, made it unfeasible to observe customer behaviour throughout the experiment. This limitation significantly impeded the analysis of the intervention effect, a challenge addressed in Paper 4.

The empirical study in Paper 4 was conducted at the 'healthy fast-food' restaurant MAHA, which has two locations in central Stockholm, Sweden. The menu includes seven signature bowls at a medium price range according to Stockholm standards (US\$12.9–14.4) and is the same in both locations. While a second intervention study was initially planned for Sälen, operational issues led to the need to find an alternative location. The MAHA in Stockholm was selected for several reasons, including good connections to the restaurant owner (via my supervisor) and the practical aspect of geographical proximity to where I lived. Although the change in restaurants prevented the development of the first intervention and direct comparison between findings, carrying out another intervention study at MAHA offered advantages in the practical

research design and making comparisons between restaurants with different food options, customer segments, and management. As MAHA only involved one manager and four staff and I was able to visit the restaurant daily, the pre-study included ongoing informal discussions with the manager and staff, along with two longer planning meetings, as opposed to structured qualitative interviews. While I introduced the idea of testing an endorsed message, decisions regarding the endorser, targeted dishes, and intervention setup were determined collaboratively.

The endorsed environmental appeal message targeted a plant-based dish and a fish-based dish, which were identified as having the lowest carbon footprints on the menu. The message featured a picture and the name of the endorser, along with a text written from her perspective promoting the two dishes, and the carbon footprint of these dishes compared to the average lunch in Northern Europe (Gay et al., 2023; World Wildlife Fund, 2023). The endorser – a Swedish influencer, fitness coach, and food enthusiast – was selected due to her prior collaboration with the restaurant, alignment with the target audience, credibility in matters related to food, and her substantial reach and engagement on social media, making her well-known in the local food and fitness scene. Like the social norm interventions in Papers 1 and 2, the message drew from various theories, including Attribution Theory (Heider, 1958) and normative goal-framing (Lindenberg, 2008) while also appealing to self-benefits (health), and social influence. The message was prominently displayed on flyers at each table, on posters near the restaurant counter, on a poster stand along the walkway outside the restaurant, and as an Instagram post. Input from the restaurant manager, endorser, and staff played a

crucial role in finalising the design and determining the optimal placement.

Concurrent qualitative data collection during the quantitative phase included observations and interviews on customer behaviour and formed a significant part of this study. Participant observation, conducted over 18 days (2–4 hours per day) alternately between the two restaurant locations, enabled the recording of customer and restaurant activities from a neutral standpoint (Williams, 2008). Recorded data encompassed orders and key details such as date, time, group size, and other pertinent factors that were deemed relevant to consumers' food choice behaviour. I also conducted 14 short interviews (lasting approximately 10 mins) with some customers to gain insights into the segment, their food choice behaviour, and factors influencing the intervention effect.

Considering the small restaurant size, customers were approached only when the venue was not busy to ensure privacy and avoid drawing attention. Interviews were conducted immediately after they had finished their meal, to minimise disruption, with customers assured of confidentiality and the right to decline. Notes were taken during the interview and expanded upon immediately after. The interview questions did not directly address environmental sustainability or the endorsed message, but aimed to understand food choices, dining preferences, and demographics.

The qualitative data contributing to Paper 3 and 4 were manually examined using an inductive thematic data-driven analysis to extract meaning and draw conclusions related to the research questions (Nowell et al. 2017; Burnard et al. 2008). Thematic analysis appeared as the most suitable approach for this due to its adaptability to different types of qualitative data, without being bound to predefined

categories (Burnard et al., 2008; Walters, 2016). Specifically, the purpose was to derive insights about providers' drivers and barriers (Paper 3) and consumer food choice behaviour (Paper 4) directly from the workshop, interview, and observation data without imposing preconceived notions.

In the analysis, the raw data were first organised as a single body for familiarity and initial feature extraction. Secondly, initial codes were generated and allocated to the raw data in an Excel sheet, to simplify and focus on specific characteristics. Following this, codes related to similar ideas and concerns were condensed into basic themes and subsequently consolidated into recurring topics, such as behavioural drivers of health and price, in Paper 4 (Gay et al., 2023; Nowell et al. 2017). Notably, much of the data from the workshops in Paper 3 had already been collaboratively organised into themes during the sessions. This analysis provided insights into the perspectives of manager and staff regarding behavioural interventions in Paper 3, and the customer segment, their interaction with each other and staff, and key factors influencing their food choices in Paper 4.

### **4.3.2 Quantitative Methods**

Field experiments, specifically surveys and direct measurements of the target behaviour, form the primary quantitative methods.

I used a before–after between-subject design consistently across all experiments, assessing differences in target behaviour before and after interventions, using different subject groups (Thomlinson, 2018). The number of conditions differed slightly in the experiments. Ideally, I would have included a second control condition after the interventions in every experiment to verify their effect. However, this was not feasible in Papers 1 and 2 due to field conditions. One

intervention was tested in each experiment, except in Paper 2 where the number of donation signs was increased twice. Group assignment occurred naturally, reflecting the natural visitor flows to Rörbäcksnäs and the restaurants. The absence of random assignment necessitated the identification of potential confounding variables based on the literature and pre-studies, and including them in the data analysis, to allow greater internal validity. Further, I chose the timing of my field experiments to maximise the likelihood that the composition of participants was the same across all conditions (Viglia & Dolnicar, 2020).

In Paper 1, surveys were employed before and after interventions to measure the prevalence of the target behaviour and intervention effect. While measuring actual behaviour could mitigate biases inherent in self-reported data, method selection was based on advantages in addressing research questions for this first study and overall thesis, along with practical challenges in tracking visitor numbers and matching them to donations. Moreover, surveys provided insights into otherwise unobservable behavioural drivers, such as personal and perceived social norms, and included questions to control for potential confounding variables. To minimise bias, I asked participants to complete the surveys shortly after biking, ensuring proximity to the actual behaviour without them being aware of the experiment. Systematic random sampling of survey participants was used by approaching every third biker, where possible (Lambrecht & Tucker, 2018). To avoid social desirability, participants filled out the surveys individually and anonymously and I maintained distance to avoid influencing participants (Cerri et al., 2019). Additionally, an electrical counter at the main trail entrance monitored visitor flow across conditions. Actual donation amounts



and number of donors were retrieved from the Swish (Swedish mobile payments) account, but this information was only employed as control measures and was not further analysed in Paper 1.

In Paper 2, the survey collection mirrored the approach in Paper 1. However, in this case, actual donation data was also analysed at an aggregate level to complement the survey data. Another researcher conducted the statistical analysis of this data, as well as much of the statistical work in Paper 1, while I focused mainly on interpreting the results. Logistic regression analysis was employed to identify drivers of the target behaviour. This enabled an assessment of whether the drivers proposed in behavioural theories and literature had a significant impact on donation behaviour, allowing for the validation or rejection of their applicability.

For the experiments conducted in Sälen and Stockholm, a comparable design was employed to assess consumers' food choices before and after the intervention. The data gathered during the experimental conditions comprised daily sales of menu items and revenue, which were automatically recorded in the kitchen systems. In Paper 3, only descriptive statistical analysis was used to assess the intervention effect on orders and carbon emissions of the menu items. Although the overall number of observations was high, significant variation in the frequency of observations for different menu items, combined with the lack of supplementary data such as surveys, restricted the potential for more in-depth analysis (see Limitations in Section 4.3.4.).

In Paper 4, SPSS was used for the statistical analysis, encompassing descriptive statistics and chi-square to evaluate the effect of the interventions on orders. Only data from one of the restaurant locations was used for the final quantitative analysis due to the small

number of orders in the second location and consequent difficulties in interpreting the result. However, analysing the combined data of both restaurant locations showed similar results. Revenue across conditions was also broadly assessed in Papers 3 and 4 to ensure that the intervention did not have significant negative economic impacts (note that these calculations did not include costs).

For Papers 3 and 4, I considered collecting survey data in order to delve deeper into behavioural drivers and intervention effects. However, I rejected this idea due to managers' concerns about disrupting guests' dining experience and wishing to avoid drawing attention to the experiment and the sustainability of the menus. Additionally, implementing multiple interventions targeting various psychological constructs would have been ideal to disentangle the impact of different factors, especially in Paper 4. However, this idea was ruled out due to potential confusion among returning customers, the inability to match individual customers to their orders, and time constraints. Hence, practical application took precedence, and qualitative data, coupled with literature insights, were utilised to support the analysis of quantitative findings.

### **4.3.3 Mixed-methods Analysis**

Mixed-methods analysis involves integrating qualitative and quantitative data to gain a comprehensive understanding of the research questions (Creswell & Plano Clark, 2017). In the present research, qualitative and quantitative data were collected through distinct methods but combined in the individual analyses and the overall discussion (Chapter 6) to provide a richer and more nuanced perspective on pro-sustainable behaviour in T&H and behavioural intervention design. The use of this methodology had four main advantages.

Firstly, the mixed methods analysis was conducted to triangulate findings from the qualitative and quantitative data sources, which enhanced the overall validity and depth of answering RQ1. To merge these datasets, qualitative themes from the observational data and customer interviews, as well as from stakeholder workshops and interviews, were cross-referenced with corresponding quantitative findings on consumer behaviour. For example, provider perceptions from the interviews (Paper 1) were compared with reported and actual donation behaviour (Papers 1 and 2) and further supported by my field observations. Similarly, during the food-choice experiment in Paper 3, qualitative insights from workshops helped to contextualise the quantitative data on menu item sales, which enriched the interpretation of quantitative results on consumer food choices. In Paper 4, customer interviews and observational data, along with insights from staff and managers, were analysed to support the interpretation of quantitative findings. Moreover, the qualitative data analysis modified and strengthened quantitative data interpretation by helping to explain unexpected patterns in the results (Paluck, 2010). For instance, in Paper 4, qualitative insights from interviews helped me interpret why certain consumer groups responded more favourably to the endorsed message. This explanatory power derived from the mixed methods approach added depth to the analysis and strengthened the overall validity of the studies.

Secondly, qualitative data shed light on the opportunities and challenges for providers in promoting pro-sustainable behaviour, which helped address RQ2. Through interviews, workshops, and meetings, providers first unveiled the complexities of the sustainability issues (funding system for trails and sustainable food

consumption) from an industry perspective, leading to a definition of the problem within the specific study contexts. The qualitative data also revealed the providers' perspectives on the feasibility of different interventions, highlighting not only potential barriers but also existing knowledge and motivation.

Thirdly, qualitative data were pivotal in shaping the intervention design. The qualitative findings gleaned from interviews and workshops enriched the insights that could be gained from simple stakeholder meetings. These findings directly informed the interventions, ensuring they were not only theoretically grounded but contextually relevant from a consumer and provider perspective, thus facilitating greater acceptance.

Lastly, comparison between quantitative and qualitative findings made it possible to identify inconsistencies between the provider and consumer perspectives, pointing to new questions and unexpected findings. For example, in Paper 2, stakeholders' beliefs about tourists' perception of their donation signs as captured in the interviews, and tourists' actual perceptions and behaviour as captured in the surveys highlighted a gap between these perceptions.

The pre-studies, including the informal stakeholder meetings, were typical elements of applied research projects, but were also crucial in methodologically defining the experimental setup such as its timing, design, and data collection. Although adaptations to initial plans were frequently required during the experiments, which impacted the analysis of quantitative findings, the information gathered during the pre-studies was essential for the practical execution of the experiments. This illuminated the challenges inherent in field

experimental methods, adding to my experience collaborating with industry stakeholders in research.

Ultimately, the mixed methods analysis allowed for a holistic interpretation of pro-sustainable consumer behaviour (RQ1), providers' drivers and barriers (RQ2), and intervention design and testing (RQ3), leveraging the strengths of both qualitative and quantitative data to provide a comprehensive understanding of the research questions. The analysis showcased how qualitative insights not only supported quantitative findings but also informed the design of theoretically grounded and practically relevant interventions.

#### **4.3.4 Research Design Limitations**

My methodological approach had several drawbacks that require consideration. The main limitations, in addition to those outlined in my papers, are discussed below.

Firstly, my observations were influenced by my background knowledge, theories, and experiences. This also includes the pragmatic lens I adopted, which affected the selection, omission, and focus of my studies (Prayag, 2018), including the literature reviews, and the qualitative and quantitative components. Moreover, not being native to the country of my cases affected communication during meetings and workshops, which were primarily conducted in English. This might have changed how participants expressed themselves and what I interpreted from their expressions. This was mitigated by encouraging participants to speak Swedish, when they were more comfortable doing so, while collaboration with other researchers, transparent research processes, and acknowledging my

'lens' throughout the interpretation process further helped address these limitations.

Secondly, while field experiments provide valuable insights into real-world behaviours, the inability to control all extraneous variables can impact the internal validity of the study. I had to balance the practical feasibility (such as survey length) of capturing potential covariates in my field experiments and including all relevant control variables. For instance, explicitly measuring personal dispositions can be resource-intensive and did not align with the practical constraints of all my field experiments. To strike a balance, literature reviews on donation and food choice behaviour, along with pre-studies and experiment observations, helped me identify the most relevant factors that might lead to errors in my studies. Although I had to omit other potentially influential variables, I considered this an informed trade-off that was necessary for the value of a field experimental approach.

Additionally, the lack of manipulation checks limited my ability to gain a deeper understanding of the underlying psychological mechanism and could raise concerns about whether the participants perceived the intended manipulations as I expected they would, which could potentially affect the reliability of the causal inferences drawn from the study (Viglia & Dolnicar, 2020). The decision to not test interventions in a controlled environment before conducting field experiments may also affect the external validity, limiting the ability to predict how interventions might perform in different settings. However, considering time constraints and my objective to test interventions in real-world settings in collaboration with stakeholders, I prioritised conducting several field experiments and incorporated measures to eliminate the risk that participants would not pay attention to the intervention (for example, survey questions

asking whether they saw the donation sign, displaying the intervention in several prominent places, observing participants).

Furthermore, potential pre-measurement or interaction effects associated with repeat visitors could not be fully eliminated. To minimise this risk, survey and interview questions in Papers 1, 2, and 4 asked participants if they had visited the destination/restaurant before, and each experimental condition lasted approximately two weeks, avoiding repeated intervention changes. In Paper 3, the restaurant customers were tourists who were staying in Sälen for a limited number of days, which reduced the risk of repeat visits being subject to the same experiment condition.

Regarding generalisability, given the context-specific nature of field experiments, the findings from this research may not be universally applicable to other settings or populations. Notably, I conducted the field experiments for Papers 1, 2, and 3 during the COVID-19 pandemic, which not only affected communication with providers but also the samples in my studies. Due to travel restrictions, most mountain bikers in Rörbäcksnäs were domestic visitors from Sweden. While this resulted in a homogeneous sample, reducing complicating factors such as international visitors not having Swish, it is relevant to consider that different cultural groups hold distinct knowledge of destinations and values, which can impact behaviour (Filimonau et al., 2018; Minton et al., 2018). Therefore, restricting the study to Swedish participants needs consideration in my findings and their implications for interventions tailored to specific environmental or cultural contexts.

Given the limitations related to generalisability and validity, I do not consider the patterns identified in the experiments as the ultimate

truth but rather as patterns within the current research contexts, which possibly points to more general similarities in pro-sustainable behaviour. This reflects my pragmatic research approach, emphasising practical applicability and contextual relevance over absolute, universal assertions and broad generalisations.

Another aspect requiring acknowledgement in my research design is the potential spillover effects and longevity of the behaviour change. Despite focusing on interventions that offer potential for sustained change, it is beyond the scope of my research to measure the actual long-term impacts on consumers' values, norms, and behaviour. Furthermore, as in many studies on behavioural intervention (Hall et al., 2016), negative rebound or spillover effects may have occurred and gone unnoticed. While I did assess potential impacts on revenue in my second case and consumer satisfaction where possible, there are other ways in which spillover may materialise. Given the limited understanding of the long-term effects and unintended consequences of interventions, this requires attention from practitioners and academics.

Lastly, while the mixed-method approach facilitated strong collaborations with providers, the collaborative nature of implementing studies with them presented challenges. In both cases, intervention implementation faced delays due to uncertainties about the message (Papers 1 and 2) or challenges in stakeholders' business operations (Papers 3 and 4). This necessitated changes in the experimental design and, for Paper 4, even in the context, changing from the restaurant in Sälen to the restaurant in Stockholm. Additionally, support in survey collection, as initially agreed upon by providers in my first case, was not feasible. These changes impacted my ability to collect larger samples, to gather data on guests'



characteristics in Paper 3, and the time spent on data collection. However, unexpected changes need to be anticipated when collaborating with practitioners in field experiments and, overall, I feel that the benefits outweigh the drawbacks.

### **4.3.5 Ethics**

Ethical considerations were paramount at every stage of the research process.

Survey, interview, meeting and workshop participants in all studies were provided with comprehensive information about the research before their involvement. They were assured that participation was voluntary and that they had the right to withdraw at any stage. Concerning the field experimental design in my studies, participants were not informed about the true nature of the experiment. This approach was deemed necessary to enhance validity and reduce preconceptions (Thomlinson, 2018). As the experiments were designed to measure behaviour in a natural setting, the potential adverse effects of the interventions on participants were thoroughly evaluated and aligned with the Swedish Ethical Review Act,<sup>5</sup> in close collaboration with stakeholders and fellow researchers. Factors such as autonomy, deception, or any potential impact on the overall tourism experience were carefully considered. In light of these considerations, I do not perceive the decision to withhold information from participants as a significant ethical concern.

To protect participant privacy, all personal information collected during the studies was anonymised and stored securely following the

<sup>5</sup> See <https://etikprovningensmyndigheten.se/en/what-the-act-says/> for details on the Ethical Review Act in Sweden.

guidelines for research data management at Mid Sweden University.<sup>6</sup> Participants were assured that their responses would remain confidential. In the workshops, I asked participants for their consent to take photos and notes.

Working closely with stakeholders involved transparent communication about the research goals, methods, and potential impacts. Collaborative efforts aimed to ensure that the research aligned with the stakeholders' goals while also upholding ethical standards. Delays or modifications in the implementation of interventions were communicated and agreed upon collaboratively. Having recognised the potential impact of language differences, particularly during interactions with stakeholders, I made efforts to address potential misunderstandings. Stakeholders were encouraged to communicate in their preferred language, and translations were provided as needed. This consideration aimed to minimise any potential biases introduced by language variations.

The research design and methods were communicated transparently in all studies. This transparency extended to the reporting of unexpected changes or challenges encountered during the research process.

Throughout the research, steps were taken to minimise harm to participants, stakeholders, and the broader community. While it is not possible to assess every possible unintended consequence of interventions, the unintended consequences or negative impacts of interventions were carefully considered. Acceptability of interventions was, to some extent, captured in the survey measure on

<sup>6</sup> See [Guidelines for research data management at Mid Sweden University \(miun.se, 2022\)](https://miun.se) (accessed March 25, 2024).

visitors' perception of the donation signs (Papers 1 and 2) and observation and interviews in Paper 4. Freedom of choice was further ensured by only testing interventions that required conscious information processing (Mont et al., 2014). The primary goal was to contribute valuable insights to the field of pro-sustainable behaviour while minimising any adverse effects.

## 5 Paper Summaries

This chapter provides summaries of the four papers that constitute this thesis. The purpose of the chapter is to communicate the key findings most relevant to addressing the overarching research questions, thereby establishing a foundation for subsequent discussion and conclusion.

### 5.1 Paper 1: Financing recreational trails through donations: Testing behavioural theory in mountain biking context

Nowak, M., & Heldt, T. (2023). Financing recreational trails through donations: Testing behavioural theory in mountain biking context. *Journal of Outdoor Recreation and Tourism*, 42, 100603. <https://doi.org/10.1016/j.jort.2022.100603>

Paper 1, connected to the first case, reports on my first field experiment in Rörbäcksnäs, situated in Dalarna (Sweden), which examined the effect of a social norm intervention on the share and amount of donations for mountain biking trails using survey data.

The pre-study and baseline surveys revealed that although local stakeholders and tourists both value the donation-based trail funding approach, uncertainty exists about the proportion of donors.

Informed by these insights, as well as literature on interventions in public good settings, I tested the social norm intervention, employing a sign featuring a descriptive norm and framing to enhance awareness of consequences, attribution of responsibility, equity, and collective action.

The results demonstrated an increase in the share and amount of donations post-intervention, supported by logistic regression analysis indicating that social norms are a significant driver for donation behaviour, alongside personal norms. This finding confirms the influence of social norms, specifically beliefs about the donation behaviour of others, in an underexplored context of tourism, contributing to the understanding of pro-sustainable tourist behaviour. Moreover, it offers practical recommendations for providers in similar contexts, suggesting that messages incorporating social norm information can serve as an easily implementable intervention to encourage donation behaviour among tourists.

The study concluded that voluntary contribution schemes enriched with normative messages can present effective funding strategies for recreational nature-based trails, emphasising the importance of tailoring these strategies to the local context. At the same time, findings in Paper 1 revealed that although a significant portion of tourists hold strong personal norms in favour of donating, they remained unaware of the opportunity to contribute. This indicated the need to employ additional channels and displays to enhance awareness.

## 5.2 Paper 2: Testing the Effectiveness of Increased Frequency of Norm-Nudges in Encouraging Sustainable Tourist Behaviour: A Field Experiment Using Actual and Self-Reported Behavioural Data

Nowak, M., Alnyme, O., & Heldt, T. (2023). Testing the effectiveness of increased frequency of norm-nudges in encouraging sustainable tourist behaviour: A field experiment using actual and self-reported behavioural data. *Journal of Sustainable Tourism*, 1–25.

<https://doi.org/10.1080/09669582.2023.2220979>

Paper 2 presents the results of the second field experiment in Rörbäcksnäs (Dalarna, Sweden). The experiment explored the impact of an increased number of social norm interventions on the propensity of tourists to donate and their experience using survey and actual behavioural data. This investigation stems from Paper 1's findings that norm nudges appear effective in this setting, but that potential barriers like lack of awareness or forgetfulness may hinder donation behaviour. Additionally, local stakeholders expressed concerns that a higher number of signs might interfere with tourists' experience and backfire on the desired behaviour, which initially prevented them from implementing more donation signs. Similar concerns have been noted in the literature on environmental messages in tourism and hospitality, which has posed barriers to communicating sustainability information effectively to consumers. However, no previous experiments have studied backfiring effects of increased intervention numbers in a tourism and hospitality context, especially beyond pro-environmental behaviour.

The intervention message content, along with its theoretical grounding, remained the same as in Paper 1. However, the hypothesis about potential backfiring and much of the discussion drew additional insights from Goal-Framing Theory, which provided a useful framework to discuss the conflict or convergence between drivers of pro-sustainable behaviour and hedonic tourism consumption. The study also built on Paper 2 by incorporating both actual and self-reported data, allowing me to compare sources and validate the results from Paper 1.

While the field experiment did not yield a significant intervention effect, this finding contributes valuable insights by revealing that adverse intervention effects on pro-sustainable tourist behaviour, identified in some existing literature and perceived by providers, do not appear to manifest in this setting. Mountain bikers did not express any negative attitudes towards the information content and number of signs and largely expressed favourable attitudes towards donating, with some responses even indicating that the message could be pushed further. The findings reinforce those from Paper 1, emphasising the significance of personal and social norms in pro-sustainable behaviour. The results of Paper 2 also underscore the importance of identifying barriers for destination providers to encourage more pro-sustainable consumer behaviour and the need to provide empirical evidence about consumers' actual behaviour to address these challenges.

### 5.3 Paper 3: Co-designing carbon label interventions in restaurants: Insights from a Field Experiment in a Tourism Destination

Nowak, M., Heldt, T., Lexhagen, M., & Nordström, J. (2024). Co-designing carbon label interventions in restaurants: Insights from a Field Experiment in a Tourism Destination. *Scandinavian Journal of Tourism and Hospitality Management*, 1-26.

10.1080/15022250.2024.2427776

Paper 3 is linked to my second case, centred on the field experiment conducted at a burger and pizza restaurant in Sälen situated in Dalarna, Sweden. The aim of the study was to assess the impact of a collaboratively designed carbon label intervention on tourists' food choices, focusing on the involvement of managers and staff in developing behavioral interventions to reduce the carbon footprint of meals.

This study contributes to the literature on carbon labels in the tourism and hospitality context, a field that remains underexplored, particularly in à la carte restaurants where consumers have more opportunities to compare items and researchers can identify potential substitution patterns. However, the central purpose was not just to examine the impact on consumer choice; emphasis was also placed on collaborative intervention design with industry partners. Consequently, a significant portion of attention was directed toward the pre-study, involving workshops with restaurant staff and managers. This aimed to identify the challenges and opportunities they faced in offering and promoting climate-friendly food options to

consumers, ultimately informing the intervention and experiment design.

The results indicated that the intervention had a limited overall effect on consumers' food choices and CO<sub>2</sub>e (carbon dioxide equivalent) emissions, which aligns with existing studies on environmental food labels in tourism and hospitality. Nevertheless, a subset of consumers seemed to shift from high-emission to medium-emission dishes, offering new evidence that carbon labels can influence a segment to choose climate-friendlier options in tourism and hospitality settings. Moreover, the paper underscored the value of collaborative workshops in intervention and experimental design processes, where staff exhibited high engagement and provided invaluable input. This also highlighted the need for compromises when partnering with commercial hospitality operators, such as regarding label design and experiment timing.

Despite the modest immediate impact on food choices, Paper 3 concludes that carbon labels can be a viable tool for restaurants to influence a subset of consumers toward lower-emission options, potentially enhancing awareness and carbon literacy over time. It also emphasises the significance of considering guest satisfaction in interventions within commercial hospitality businesses, the importance of engaging restaurant staff and managers to foster commitment, and the need for ongoing adaptation in intervention design.

Despite these valuable contributions, the research acknowledges certain important limitations in the study design, restricting a more detailed analysis of customers' food choice behaviour.



## 5.4 Paper 4: Influencing Pro-Environmental Dining in Restaurants: A Field Experiment on Endorsed Environmental Messages

Nowak, M.

**Status:** Manuscript

Paper 4 is also linked to my second case, focusing on climate-friendly food choices, but was conducted in a casual à la carte restaurant in Stockholm, Sweden. This field experiment aimed to study the impact of an endorsed environmental message on restaurant consumers' food choices and the factors influencing their decisions.

Building upon the groundwork laid in Paper 3, the field experiment in Paper 4 combines environmental messages (carbon information) with endorsement (social influence), thus addressing a research gap regarding the impact that endorsed messages have in terms of encouraging climate-friendlier food choices in restaurants. To determine the specifics of the intervention and experimental design, comprehensive meetings were conducted with the restaurant manager and staff. These discussions yielded valuable insights into the selection of the endorser, the most effective method for gathering customer behaviour insights (interviews), and considerations for the experimental setup.

The intervention targeted the most climate-friendly plant-based and non-vegetarian (fish) options on the menu, determined by calculating the CO<sub>2</sub>e (carbon dioxide equivalent) emissions of all dishes on the menu. It involved a message displaying the carbon footprint of the two targeted dishes, accompanied by text encouraging consumers to choose one of these options, supported by a photo of the endorser.

The effectiveness of the intervention was tested in a six-week-long field experiment that involved collecting actual behavioural data in the form of menu item sales. Non-participant observations and customer interviews were conducted simultaneously to garner further insights into customer behaviour and evaluate the intervention's effectiveness.

Quantitative analysis of the sales data indicated a 7 per cent combined increase in the uptake of the targeted dishes due to the intervention. However, qualitative findings underscored that personal recommendations from staff and self-oriented benefits, particularly health, remained pivotal factors influencing customers' food choices. The results suggest that endorsed environmental messages can present an easily implementable intervention for food service providers to enhance the uptake of climate-friendlier dishes, without having to label the entire menu. However, the study also underscores that messages need to be tailored to the audiences' specific preferences and that staff engagement could amplify the intervention's impact. The paper contributes valuable insights into the behavioural factors that influence climate-friendly food choices in restaurants, offering practical implications for designing market-relevant interventions that reduce the environmental footprint of the hospitality sector without compromising, or even enhancing, customer experience.

## **6 Discussion**

This thesis examined pro-sustainable consumer behaviour in tourism and hospitality (T&H) by testing behavioural interventions through field experiments. The aim was to enhance knowledge on pro-

sustainable consumer behaviour in T&H and ways to encourage such behaviour through behavioural intervention. The thesis comprised four field experiments, testing four different interventions, aimed at two distinct target behaviours: donations for mountain-biking trails and climate-friendly food choices. While presenting individual field experiments and journal articles, all four studies are concerned with the thesis's research questions: *What are the drivers and barriers to sustainable consumer behaviour in T&H settings? What are the drivers and barriers for T&H providers in making pro-sustainable options more available and attractive to consumers? How can behavioural interventions be designed to encourage pro-sustainable consumer behaviours in T&H?*

This discussion section connects the findings from the individual papers and examines the findings that emerged through a comparison of the studies in connection to the thesis' theoretical foundation, providing answers to the research questions. The structure of this chapter follows the focus of the research questions. It starts with drivers and barriers to pro-sustainable consumer behaviour, followed by a discussion of the providers' perspective, which demonstrates certain differences and tensions to the consumer perspective. This then leads to a discussion of effective intervention design, including aspects to consider in the process of developing and testing these, and the applicability of different interventions in T&H settings.

## **6.1 Drivers and Barriers to Pro-sustainable Behaviour in Tourism and Hospitality**

The findings from the individual papers highlight key drivers and barriers to pro-sustainable consumer behaviour, revealing consistent patterns across Papers 1 and 2, which examine donations for MTB

trails in Rörbäcksnäs, and Papers 3 and 4, which explore climate-friendly food choices in restaurants in Sälen and Stockholm. This section discusses the specific social, personal, and situational drivers and barriers within these T&H settings, facilitating a comparative analysis that contributes to the knowledge of pro-sustainable consumer behaviour in T&H.

### **6.1.1 Social Factors**

In the context of donations for mountain biking trails in Rörbäcksnäs, survey results and the positive effect of social norm interventions on donation behaviour highlight the significance of *social norms* as drivers of pro-sustainable behaviour. Consistent with literature suggesting that awareness of others' expectations and behaviour significantly influences pro-sustainable behaviour (Abrahamse & Steg, 2013), including donations for public goods (Alpizar et al., 2008; Heldt, 2005), stakeholder interviews and initial visitor surveys in Paper 1 identified uncertainty about others' donations as a barrier to donating for MTB trails in Rörbäcksnäs and possibly across Sweden. Since donating to MTB trails is a relatively new practice, is challenging to track, and is often not directly observable by fellow visitors, information about typical donation amounts and the prevalence of donors is not widely known (Tillväxtverket, 2023). The surveys also revealed that most mountain bikers were first-time visitors to the destination and did not frequently participate in MTB, which meant they were unfamiliar with local norms.

The field experiment demonstrated that the social norm intervention, which communicated local social expectations (*injunctive norms*) and the typical donation amount and share of donors (*descriptive norm*), effectively addressed this barrier of uncertainty and encouraged donation behaviour. This aligns with the concept of *informational*

*social influence* (Deutsch & Gerard, 1955), where individuals conform to others' behaviour in ambiguous situations. It also supports the findings of other studies on social norm interventions in public good contexts (Alpizar et al., 2008; Goldstein et al., 2008; Heldt, 2005, 2010), where collective effort is required but the behaviour is not directly observable. Consequently, Papers 1 and 2 provide empirical evidence that social norms are influential drivers of donation behaviour for MTP trails, a context that has been understudied to date.

Moreover, while Paper 1 focused on stated behaviour, the field experiment in Paper 2, conducted one year later, further reinforced the significance of social norms with survey and behavioural data. Comparing the studies' findings revealed an increase in the target behaviour since the first social norm intervention, with about 14 per cent more visitors reporting that they donated. This suggests that the norm to donate became more established over time as the salience of normative behaviour was enhanced through the interventions, contributing insights into the long-term impacts of social norm interventions.

In the context of climate-friendly food choices in restaurants (Papers 3 and 4), psychological constructs were not directly measured via surveys. Nevertheless, the field experiments and qualitative interviews and observation (Paper 4) revealed several drivers and barriers for consumers making climate-friendly choices, particularly comparing the findings between Papers 3 and 4 and considering contextual differences to the first case. In terms of social factors, Paper 4 revealed that these both motivated and hindered climate-friendly choices in the restaurant setting in Stockholm. Firstly, although a notable portion of consumers selected the meals that were recommended in the intervention message, the *endorsement* effect

could not be isolated from other elements such as increased salience of carbon information. More notably, observational findings revealed the substantial influence of recommendations from staff and other customers. More customers followed personal recommendations over formal written endorsements when the two conflicted. As suggested in the literature, this phenomenon may be attributed to *normative social influence*, where customers seek to follow the norms of others in a group to fit in, regardless of whether these norms align with their private beliefs (Deutsch & Gerard, 1955).

Additionally, consumers may perceive written information in commercial settings as marketing material (Bhaskaran et al., 2006; van Bussel et al., 2022), which could lead to a lack of trust regarding whether the recommended option truly helps mitigate climate change (Grilli & Curtis, 2021). Therefore, it can be assumed that customers may seek validation from individuals in their close social proximity, such as staff or dining companions, providing credible *injunctive information* about an appropriate choice in terms of its sustainability or other desirable attributes (Borchgrevink & Susskind, 2006; Sukhu & Bilgihan, 2021).

The findings from Paper 4 confirm the pivotal role of social norms in pro-sustainable food choices (León & Araña, 2020; Krpan & Houtsma, 2020), and further add to knowledge in this field by demonstrating that, in a restaurant setting, personal social influence appears more effective than written normative information.

### **6.1.2 Personal Factors**

In Papers 1 and 2, the survey results demonstrated that *personal norms* favouring donations were widespread among mountain bikers and served as significant drivers for this pro-sustainable behaviour.

Despite mixed beliefs about others' contributions, a notable proportion of visitors donated even before the social norm intervention (Paper 1, 56 per cent) when only one sign was installed at the main trail entrance requesting donations. This indicates that personal norms alone influence a considerable proportion of visitors in this setting to contribute, supporting their crucial role in pro-sustainable behaviour as proposed in models on general pro-social or pro-environmental behaviour (PEB) (Ajzen, 1985; Rodriguez-Sanchez et al., 2020; Schwartz, 1977). However, the findings contrast with studies on the attitude-behaviour gap and interventions aimed at PEBs in commercial T&H contexts, such as hotels, where awareness and responsibility-raising appeals targeting personal norms are often ineffective at facilitating pro-sustainable behaviour (Dolnicar et al., 2017, 2019).

Although this research did not test for interaction effects, it is likely that the prevalence of favourable personal norms strengthened the influence of social norms. Prior research indicates that the alignment between personal and social norms influences how individuals navigate and respond to social information (Bicchieri et al., 2019; de Groot et al., 2021; Doran & Larsen, 2015; Schwartz, 1977; Thøgersen, 2009). Individuals are more likely to comply with social expectations when personal and social norms align, due to congruence between group and individual objectives and greater perceived *efficacy* (Bacharach, 2006; Kollmuss & Agyeman, 2002). In this research context – unlike in other T&H settings where social norm interventions appear less effective (Dolnicar, 2020; Greene et al., 2023) – the communicated social norms were directly tied to a specific behaviour that benefits both the individual and the collective, such as maintaining trail quality and giving back to the local providers. This

suggests that making the otherwise invisible target behaviour visible through normative information provided visitors with an affirmation of their personal norms and assurance that their contribution was effectively supporting trail upkeep (Alpízar et al., 2008; Bicchieri, 2006; Heldt, 2005).

Personal norms related to climate-friendly food choices were not directly measured in Papers 3 and 4. However, the limited impact of carbon labels in Paper 3 suggests that pro-environmental concerns and associated personal norms alone did not significantly influence food choices in the burger and pizza restaurant in Sälen.

Furthermore, interviews in Paper 4 with consumers in the Stockholm restaurant revealed that environment-related norms were scarcely mentioned as factors driving food choices when eating out; instead, personal health norms were more prominent. Aligned with the literature (Kollmuss & Agyeman, 2002) and supported by the positive effect of the intervention focussing on both health and environmental benefits, this suggests that motivation to engage in PEB increases only when personal priorities align with the targeted behaviour.

### **6.1.3 Situational Factors**

The individual papers, along with a comparative analysis of the cases based on the theoretical framework, indicate the influence of situational factors such as the visibility of the target behaviour, type of activity, and type of provider, and linked to this the impact of information salience in shaping pro-sustainable behaviour within specific T&H contexts.

In the context of donations for MTB trails, which are characterised by *uncommercialised*, voluntary tourism provision set in *nature*, personal norms emerged as significant drivers of donation behaviour. This



contrasts with their less influential role in driving pro-sustainable behaviour in commercial T&H settings (Dolnicar et al., 2017, 2019), which indicates that the specific context affects how personal norms are activated and influence such behaviour. While existing studies on pro-sustainable consumption and behavioural change primarily focus on commercial and urban settings (Khan et al., 2024), some studies have indicated that experiencing nature can enhance environmental connection and responsibility (Campbell et al., 2021; Choi & Kim, 2021; Line et al., 2018). Research also suggests that donating to recreational trails that are developed and maintained by locals can offer visitors a means to reciprocate and support the communities they visit (Choi & Kim, 2021; Fleckhaus & Heldt, 2022).

Accordingly, tourists who utilise recreational trails, such as those in Rörbäcksnäs, may be more inclined to support initiatives benefitting the local community and natural area. Moreover, by presenting a direct way to contribute to the maintenance of the trails and areas they enjoy, donations are likely to be associated with a high sense of personal responsibility and efficacy (Ajzen, 1985; Kollmuss & Agyeman, 2002; Stern, 2000), thereby further activating personal norms and fostering positive feelings like pride and warm-glow (Campbell et al., 2021; Steg et al., 2014b).

Building on the above, the findings from Papers 1 and 2 underscore that the *physical salience* of interventions is crucial for driving pro-sustainable behaviour in the form of donations for MTB trails by drawing attention to normative information. While many studies have focused on the content of sustainability-oriented messages (e.g., Morgan & Chompreeda, 2014; Kim & Kim, 2014; Kronrod et al., 2012; Ropret Homar & Knežević Cvelbar, 2023), it is only recent research that has highlighted awareness and attention to information as

potential barriers to the effectiveness of belief-based interventions (Dolnicar & Demeter, 2023). However, the number or frequency of interventions needed to be effective in pro-sustainable T&H contexts remains underexplored. Paper 2 contributes to this field by emphasising the importance of the content but also the physical salience of normative information. Ensuring sufficient visibility without triggering reactance is essential for activating personal and social norms or facilitating the formation of new norms specific to the behaviour, which will ultimately enhance engagement in pro-sustainable behaviour (Gregory et al., 1994; Lindenberg, 2006).

Collectively, the findings in Papers 1 and 2 on the influential role of personal norms, social norms, and the salience of normative information reveal that visitors exhibited more of an *awareness-behaviour gap* than an attitude-behaviour gap. While awareness may be an apparent driver of pro-sustainable behaviour, this finding contrasts with the prevailing assumptions of stakeholders in this setting, who believed that many visitors were aware but unwilling to donate, fearing that increased salience of signs might induce negative feelings like annoyance, potentially leading to backfiring effects. This finding also contrasts with those on PEBs in commercial hospitality contexts, where consumers generally appear unmotivated to engage in pro-sustainable behaviours, regardless of their awareness (Dolnicar et al., 2019; Juvan & Dolnicar, 2014b). Hence, pro-sustainable motivations may already be more salient in a context like Rörbäcksnäs, which involves nature-based activities and voluntary tourism provision. However, raising this salience through normative content and prompts is crucial to foster the desired pro-sustainable behaviour among a significant portion of visitors.

Papers 3 and 4 shift the focus to climate-friendly food choices in *commercial* hospitality settings, where consumers are faced with a multitude of options and their goals and behaviours are framed differently (Juvan & Dolnicar, 2014b; Gnoth, 1997; Lindenberg & Steg, 2007). Consistent with literature indicating that food consumption in restaurants often prioritises personal gains or pleasure - especially during special occasions like holidays – the providers in Papers 3 and 4 emphasised the importance of *self-benefit* factors like taste, and indulgence for customers (Biermann & Rau, 2020; Claessens et al., 2023; Fechner et al., 2023). As GFT suggests (Lindenberg & Papies, 2019), these *gain- and hedonic*-oriented factors may conflict with normative environmental goals, making consumers less likely to choose climate-friendly options if they perceive them to be less flavourful or satisfying (Diekmann & Preisendörfer, 2003; Furst et al., 1996; Steg et al., 2014a).

Aligned with this, Paper 3 demonstrates that carbon labels do not substantially influence customers at a restaurant in a winter outdoor destination where consumers are likely to seek convenience and comfort food and the only climate-friendly dishes are notably different (vegan) from the remaining menu options. The field experiment revealed only a marginal shift towards climate-friendlier choices. This suggests the presence of a small consumer segment, who are inclined towards sustainable eating and might derive value from aligning their choices with their environmental norms (Festinger, 1957; Font et al., 2021; Steg et al., 2014a). However, this segment was not large enough to significantly reduce the selection of climate-unfriendly options and overall carbon emissions. Moreover, the slight decrease in the selection of lowest-emission dishes and the unchanged or slightly increased choices of highest-emission dishes

during the intervention suggest that some consumers might have increased their carbon footprint when presented with carbon information. This could be due to *reactance* or *moral licensing* effects, as suggested in prior studies on sustainability-related food labels (Bacon & Krpan, 2018; Hielkema & Lund, 2022). These findings highlight the *attitude-behaviour gap* commonly observed in food consumption and other PEBs in commercial T&H settings (Babakhani et al., 2019; Cozzio et al., 2020, 2022; Gössling & Buckley, 2016). Specifically, the evidence suggests that carbon labels are not enough to substantially influence the behaviour of tourists in a burger and pizza restaurant at a winter destination, even in a country where most consumers are aware of the climate impacts of food and express environmental concern (Boston Consulting Group, 2021; Matti, 2007).

While presenting a different restaurant setting, customer characteristics, and intervention impact, Paper 4 underscores the significance of *self-benefits* in food choice behaviour. In this intervention, carbon information was combined with endorsements, which, along with the restaurant menu overall, was both environment-focused and health-focused. Consistent with this focus, the majority of customers interviewed stated that health was the most important factor influencing their meal choice when dining out. Thus, the positive intervention effect might suggest that the endorsement, presenting the targeted dishes as healthy and climate-friendly, offered *social proof* to some customers and influenced their choices, not merely due to environmental concerns but because of perceived health benefits. According to GFT (Lindenberg & Papies, 2019), the intervention likely made the *gain* and *hedonic* appeals of the normatively desirable alternative more salient.

While the positive intervention effect supports prior research indicating that self- and other-oriented appeals are more influential in hedonic restaurant settings than solely environmental appeals (Cozzio et al., 2020, 2022; Fechner et al., 2023), it contrasts with other studies suggesting that consumers do not prioritise health when dining out (Claessens et al., 2023; Horgan et al., 2019). The fact that these latter studies were based on surveys without specifying restaurant types underscores that food choice motives like health and their relative importance can differ significantly depending on consumer segments and situational factors in specific restaurant contexts.

Adding to situational influences in commercial out-of-home food consumption contexts are economic factors (Grilli & Curtis, 2021). Even when price differences in menu options are only small, as in the restaurants in Papers 3 and 4, consumers may perceive the transition from the most preferred option to a less preferred but more sustainable one as a financial sacrifice (Hartikainen et al., 2014; Rondoni & Grasso, 2021). Prior research indicates that when such financial sacrifice is involved, compared to efforts, time, or other inconveniences, environmentally oriented nudges may be less effective (Ropret Homar & Knežević Cvelbar, 2023; Thøgersen & Alfinito, 2020). This underscores the influential role of *financial costs*, whether absolute or relative, in impeding the adoption of climate-friendly food choices.

Both restaurant studies indicate the prevalence of self-benefit considerations in food choice behaviour, which introduces the likelihood of compromises where the final decision might deviate from the ideal pro-sustainable choice (Osman & Nelson, 2019). Specifically, these restaurants, in contrast to food consumption at

home or the workplace, present hedonic dining settings where consumers tend to attribute greater importance to self-benefit factors than to environmental concerns (Claessens et al., 2023; Horgan et al., 2019). At the same time, the field experiments illustrate contrasting restaurant contexts: a burger and pizza restaurant at a tourist destination and an everyday lunch restaurant in an urban area. In the former, it can be assumed that factors like indulgence are particularly influential (Binkley, 2018; Cozzio et al., 2022; Gössling et al., 2011), whereas, in the latter, empirical findings (Paper 4) show that customers often prioritise health benefits. The intervention in Paper 4 partially addressed these personal priorities by integrating carbon information with health-focused endorsement. Nevertheless, the modest shift in behaviour, along with insights from customer interviews, shows that further barriers such as financial costs, taste, and specific dietary requirements need to be addressed to encourage greater uptake of climate-friendly choices.

#### **6.1.4 Insights and Implications Across Cases**

While discernible differences exist in the barriers and drivers that shape consumers' pro-sustainable choices between the two cases studied in this thesis, the influential driver of social norms resonates across Papers 1, 2, and 4. Paper 4 shows that while endorsed environmental messages can sway a segment of consumers towards climate-friendlier options in a restaurant, personal social influence proves to be even more impactful, likely due to greater trust in the advice and behaviour of nearby individuals and higher susceptibility to normative influence, including the desire for social approval (Deutsch & Gerard, 1955; Folwarczny et al., 2023; Gross, & Vostroknutov, 2022; Steg et al., 2014a). By contrast, in private contexts like donations for MTB trails in Rörbäcksnäs, visitors are more reliant

on written information to gain insights into the expected and common behaviour and can decide whether to follow this or not according to their internalised norms (Bicchieri & Dimant, 2019; White & Simpson, 2013).

The differences in social influence between the settings may also be linked to the tangibility of outcomes and actors involved and the associated sense of efficacy in addressing the sustainability challenge. Research indicates that while climate-friendly food choices contribute to collective goals, the diffuse nature of efforts needed to mitigate climate change and the indirect link between individual actions and broader environmental impact generally reduce consumers' perceived control, which leads to rationalisation (Ajzen & Fishbein, 2005; Eckhardt et al., 2010; Kollmus & Agyeman, 2002; Lindenberg, 2023). This lack of perceived efficacy can hinder consumers from choosing pro-sustainable options (Hunter & Rööös, 2016; Plechatá et al., 2022). Conversely, in the case of donations for MTB trails, the sustainability problem is more localised, with fewer stakeholders, which is likely to lead to a higher sense of control among visitors, who believe their contributions can make a difference, especially when they are assured that others are also donating (Kollmuss & Agyeman, 2002; White & Simpson, 2013).

The comparison between the cases enriches the theoretical understanding of how personal interactions and social dynamics shape pro-sustainable behaviour in diverse T&H contexts. Papers 1 and 2 contribute to the limited literature on socially oriented (as opposed to environmentally oriented) pro-sustainable behaviour in T&H, providing new evidence on the influence of social and personal norms in driving donations for MTB trails (Souza-Neto et al., 2022; Demeter et al., 2023). The insights into perceived and actual social

norms around donating – drawn from studies conducted over two consecutive years – further enhance our understanding of social norm development in pro-sustainable behaviour within T&H. Paper 4 also highlights the significant role of personal social influence as both a driver and barrier to climate-friendly food choices in an à la carte restaurant setting, an area that has been underexplored in existing research.

Moreover, the comparison between the cases illuminates the important influence of the specific T&H context on pro-sustainable behaviour. While the literature on behavioural change distinguishes between sustainability-oriented providers or destinations (such as eco-tourism) and general commercial T&H settings (such as hotels), behavioural intervention research often treats tourism broadly as a hedonic context that conflicts with pro-sustainable behaviour (Dolnicar, 2020; Dolnicar et al., 2017, 2019; Juvan & Dolnicar, 2014b; Knežević Cvelbar et al., 2019). More recent survey findings have emphasised that tourism settings are not universally more enjoyment-focused, challenging the argument that tourists behave less sustainably on holiday *because* of its hedonic focus (Albrecht et al., 2024).

The studies in Rörbäcksnäs, a non-commercial nature destination focused on social sustainability, but not overtly promoted as sustainable, suggest that pro-sustainable behaviour can align with visitors' goals rather than conflict with them. While goal-frames were not directly measured, the positive influence of personal norms, visitors' favourable attitude towards donation messages, and their high satisfaction with the MTB experience in Rörbäcksnäs imply that visitors may view donating as a means to support a cause they care about. Following prior research on GFT and PEPs, this engagement in



pro-sustainable behaviours, aligned with personal norms, can engender contentment, including positive feelings like warm-glow or pride, which support hedonic goals (De Young, 2000; Lindenberg & Papies, 2019; Steg et al., 2014b). Nevertheless, the field experiments indicate that these normative goals require activation through social norm information and increased awareness of donation opportunities to effectively influence behaviour in this tourism context (Capraro et al., 2019; Lindenberg & Papies, 2019).

In contrast, Papers 3 and 4 reveal that simply raising the salience of pro-sustainable choices is less effective in an à la carte restaurant setting unless these options align with consumers' primary dining motives, such as health (Claessens et al., 2023; Kollmuss & Agyeman, 2002; Lo et al., 2017). Together, these two papers emphasise the need to target specific drivers relevant to the T&H settings in normative interventions, to enable consumers to derive additional value from pro-sustainable choices, thereby strengthening normative goals (Steg et al., 2014a).

This possibility of deriving additional value from pro-sustainable behaviour has been underexplored in behavioural interventions research across different T&H settings, beyond alternative tourism types (e.g., Coghlan & Gooch, 2011; Demeter et al., 2023; Reisinger, 2013; Walter, 2013) or specific pleasure-oriented interventions like games (Coghlan, 2021; Dolnicar et al., 2020). While some studies have advocated pleasure-oriented interventions in T&H (Demeter et al., 2023; Greene et al., 2023), they can be difficult to implement (Borden et al., 2017; Coghlan et al., 2023) and may risk leading people to only engage in pro-sustainable behaviour when it is enjoyable and profitable, undermining normative goals and resulting in 'cheap morals' rather than sustained change (Steg et al., 2014a, p. 106).

Additionally, empirical evidence from Paper 2 shows that not only the content but also the physical salience of interventions is crucial for capturing consumers' attention and fostering normative behaviour without disrupting their experience (Dolnicar & Demeter, 2023). Therefore, while more research is needed to specifically measure GFT constructs, comparing different T&H settings illustrates the importance of understanding the dynamic nature of drivers and barriers and the alignment between pro-sustainable behaviours with contextual motives to gain a comprehensive understanding of such behaviour.

Figures 5 and 6 summarise the key factors that influence the pro-sustainable behaviours examined in this research, based on this discussion and the theoretical framework (Figure 4). The highlighted factors (information salience and injunctive and descriptive norms in Figure 5; information salience and endorsement in Figure 6) present the primary targets of the behavioural interventions in the field experiments presented in the individual papers. While the other factors depicted in these figures have only been partially examined empirically in this research, they have been included based on insight from the literature as well as surveys, interviews, and observations.

The figures do not show an exhaustive list of factors; rather, they are a visual summary of the findings in this research. The green colours indicate a positive influence on the targeted pro-sustainable behaviour (drivers), while the red colours denote a negative influence on the behaviour (barriers) among most of the studied consumers. Mixed colours indicate significant heterogeneity in influence – whether driving or hindering pro-sustainable behaviour – in the field experiments, specifically in Papers 3 and 4. For instance, while increased salience of sustainability information (through donation

messages that included social norms) generally had a positive effect on donation behaviour in Papers 1 and 2, enhancing the salience of sustainability information (through different carbon labels) in restaurants led to mixed outcomes: it encouraged some consumers to choose climate-friendly options but appeared to deter others.

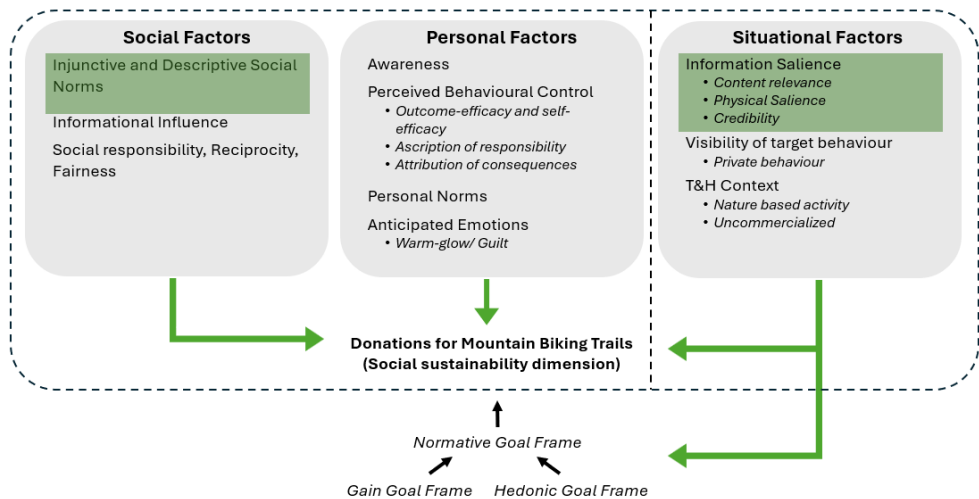


Figure 5: Factors influencing donations for MTB trails (Papers 1 and 2)

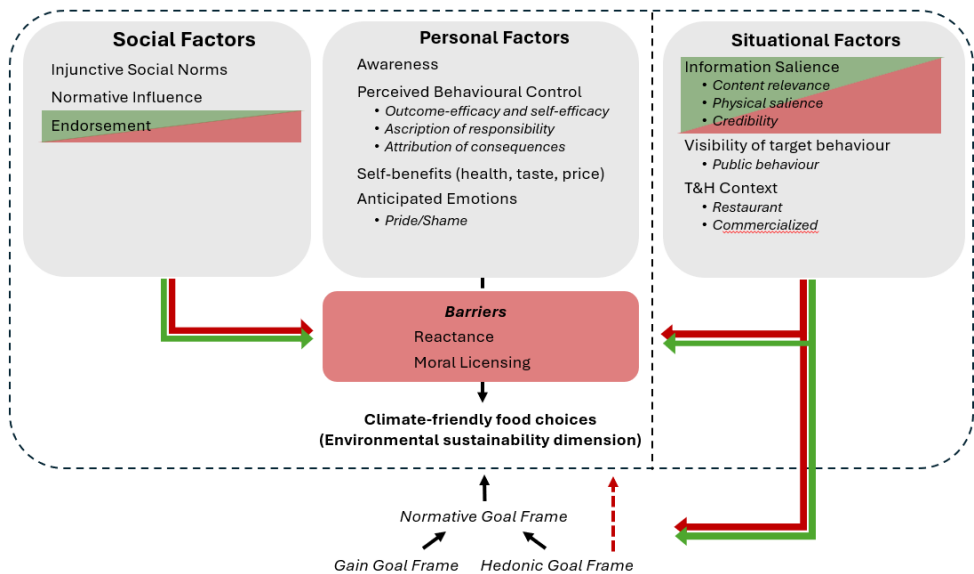


Figure 6: Factors influencing climate-friendly food choices in restaurants (Papers 3 and 4)

## 6.2 Drivers and Barriers for Tourism and Hospitality Providers

This section addresses RQ2 by examining the drivers and barriers that T&H providers face when fostering pro-sustainable behaviour among consumers. Although the importance of understanding providers' perspectives has long been recognised in sustainable tourism literature (Bimonte, 2013; Hughes & Morrison-Saunders, 2018; WTO & UNEP, 2005), it has largely been overlooked in behavioural intervention studies aimed at encouraging pro-sustainable behaviour, with a few recent exceptions (Coghlan et al. 2023; van Eeden et al., 2024). Addressing this gap across the diverse settings explored in the papers provides valuable insights for

designing relevant interventions, thereby offering a more integrated approach to addressing sustainability challenges.

### **6.2.1 Economic Drivers and Competitiveness**

In Papers 1 and 2, the providers consisted of different community members in Rörbäcksnäs, Dalarna (Sweden), with a stake in the MTB trails. The pre-studies identified that the primary motivations for stakeholders to seek financial contributions from visitors were the perceived benefits that tourism development would bring to the wider community, including positive experiences for trail users and socio-economic benefits for residents. Consistent with previous research on community members with voluntary roles in tourism development (Paraskevaidis & Andriotis, 2017), stakeholders' motivations for encouraging more visitor contributions were primarily selfless and focused on collective long-term benefits.

At the same time, maintaining a voluntary contribution approach and employing unobtrusive interventions to encourage donations were seen as crucial for competitiveness and attracting visitors who are inclined to contribute. In Rörbäcksnäs, as in many other rural destinations, natural resources and cultural identity form core values that make the place attractive to visit, despite limited tourism infrastructure (Madanaguli et al., 2023; Sharpley, 2007). Stakeholders recognised that the destination's uncommercialised image set it apart from larger MTB destinations in the region and the opportunity to voluntarily support the area's sustainability enhances its identity and potentially provides experiential value for consumers (Font et al., 2021).

Papers 3 and 4, which focused on commercial T&H providers, underscored market competitiveness as the primary driver for

restaurant managers to introduce pro-sustainable interventions, specifically incorporating carbon labels on menus. This aligns with literature highlighting the increasing pressure on T&H providers to implement sustainability practices (Jones et al., 2016; Mak & Chang, 2019) and stated consumer preferences for environmentally friendly food options (Grunert, 2020; Moser, 2016; Vermeir & Verbeke, 2006). Managers believed that consumers increasingly sought climate-friendly food, suggesting that offering such options could add value to the dining experience and, in Sälen, the touristic experience. Additionally, the rising trend of competitors in Sweden implementing carbon labels exerted pressure on providers to follow suit.

Surprisingly, neither restaurant manager placed a lot of emphasis on the direct economic effects post-implementation; this is probably due to the minimal price differences between menu items and the shared belief that labelling and sustainability messaging could indirectly enhance business image and competitiveness in the long term. Despite emphasising the need for economic gains to encourage the uptake of sustainability interventions in the T&H industry, the literature in this domain has only lightly explored the short- and long-term impacts of behavioural interventions on businesses (Allcott & Kessler, 2015; Dolnicar, 2020). Analysis of the restaurants' revenue in the field experiments indicated that the interventions did not negatively impact direct revenue from menu sales.

Furthermore, comparing different restaurant providers and their constraints illustrated that interventions like carbon labels need to be adaptable to specific operational resources if they are to be cost-effective. However, a more comprehensive analysis including costs and long-term impacts would be necessary to confirm the financial

impacts on the businesses used as cases for the field experiments in this thesis.

## **6.2.2 Values and Commitment to Sustainability**

In both cases, stakeholders aimed to promote pro-sustainable behaviour in line with their own values, highlighting a different focus and commitment to sustainability between them.

For the MTB stakeholders, the commitment to preserving the destination's unique image and 'feeling' while encouraging visitor contributions through behavioural interventions stemmed not only from the desire to maintain competitive advantage but also from the value that locals placed on free access to the trails and the tranquil nature of Rörbäcksnäs. Outdoor recreation and free access to nature are significant parts of Scandinavian culture that need to be preserved for quality of life and sustainable development (Kaltenborn et al., 2001). To retain these values and a certain lifestyle, with the belief that visitors shared similar values, stakeholders focused on improving visitors' experiences and spending by enhancing basic facilities and trail quality rather than increasing tourist numbers. Thus, engendering a sense of joint responsibility for mutual social and experiential benefits between stakeholders and visitors emerged as a key driver in the design of interventions.

In the restaurants, sustainability concerns, specifically for the environment, were acknowledged and discussed in the workshops and meetings but played a secondary role to business considerations in intervention design. Much of the discussion focused on the impact of meal choices and interventions on customers' experience and thus business performance. Consistent with prior literature (Kornilaki et al., 2019; Mak Chang, 2019), managers reported a greater focus on

operational sustainability practices (such as recycling and food waste reduction rather than direct food options), as these changes generally involve direct cost savings and do not impact customers. While such operational interventions have a limited direct impact on consumers' choices, they may create a sense of authenticity in sustainability commitment. This can foster shared responsibility to encourage pro-sustainable consumer behaviour if visible, as in the Stockholm restaurant where several food waste reduction and recycling practices were communicated to customers (Coghlan et al., 2023; Wang et al., 2017; Warren et al., 2017).

As demonstrated by the findings of Papers 3 and 4 and suggested in the literature (Bharwani & Mathews, 2023; Font et al., 2017), interventions that directly target consumers' choices often face greater hurdles from managers than back-of-house changes. Managers and staff emphasised the challenge of nudging climate-friendly options while catering to diverse food preferences, including animal protein and vegan options, and maintaining the restaurant's core values. In the Stockholm restaurant, where the manager emphasised food freedom and healthy options for diverse dietary needs, targeting a single dish or asking staff to recommend specific climate-friendly options was perceived as conflicting with these values, as it risked pushing consumers towards dishes that might not align with their preferences. This underscores the idea that T&H staff generally endorse products that resonate with their own values (Fu et al., 2010). Therefore, it is necessary to understand these values and how they align with sustainability aspects to empower them to communicate sustainability as a value-adding proposition (Font et al., 2021).



The emphasis on enabling consumers to freely choose dishes that align with their individual preference – along with the limited intervention impact in Paper 3 where only vegan options were labelled green (that is, ‘carbon-friendly’) – demonstrated the importance of offering and targeting diverse pro-sustainable food options (Font & McCabe, 2017; Jones et al., 2016; Mak & Chang, 2019). Such an approach is vital in order to meet nuanced customer preferences, remain competitive, and avoid backfiring effects (Acuti et al., 2011; Hielkema & Lund, 2022), but it may hinder consumers from being guided to the most sustainable option, as indicated in the substitution effect noted in Paper 3.

Despite differing values associated with sustainability and mixed intervention effects, managers and staff at both restaurants remained motivated to develop and implement interventions after the experiments. For example, discussions on adjusting dish compositions to reduce carbon footprints and offer a wider range of climate-friendly options continued. While this suggests that collaborative endeavours to design and test interventions may foster continued sustainability engagement among providers, further investigation is needed to evaluate sustained commitment amidst daily operational pressures.

### **6.2.3 Operational and Resource Constraints**

Apart from retaining the values of free access and the destination’s unique image, human and financial resource constraints prevented the stakeholders in Papers 1 and 2 from increasing their demand for donations. Stakeholders believed that requests for higher contributions would raise visitors’ expectations excessively, which they could not meet with their available resources, particularly given their resistance to over-commercialisation. Thus, their expectations

for visitors' contributions and appropriate behavioural interventions were largely shaped by their perceptions of what visitors expect from their MTB experience in this context. This internal pressure to maintain equitable relationships aligns with social exchange theories like Equity Theory (Adams, 1963) and reciprocity (Burger et al., 2008; Molm, 2010) and presented a foundation for developing effective interventions that shared local norms with visitors to encourage pro-sustainable behaviour. However, this pressure also posed a barrier to increasing donation requests further through more or different interventions, such as raising the salience of signs even more in Paper 2, thereby potentially raising higher funds according to visitors' actual expectations and willingness.

In Papers 3 and 4, restaurant managers and staff in Sälen and Stockholm, respectively, faced operational resource and capabilities constraints when implementing sustainability initiatives like carbon labels. Consistent with studies in diverse locations (Baloglu et al., 2020; Kornilaki et al., 2019), financial limitations played a role in the small individual-run restaurant in Stockholm. Carbon labelling schemes incur direct certification costs and potential costs for adapting dishes to be labelled as 'low-emission', which tend to burden smaller businesses disproportionately, especially if there is pressure to adopt widely recognisable labels like Klimato in Sweden (Edenbrandt & Nordström, 2023).

While these findings highlight the resource challenges that small T&H providers face in implementing environmental initiatives (Vernon et al., 2003), Papers 3 and 4 also suggest that certain organisational capabilities of such businesses facilitate the proactive development of sustainability strategies (Aragon-Correa et al., 2015). The small size and limited number of employees in the Stockholm

restaurant proved advantageous for developing and testing the intervention, as they allowed for flexible adjustments and direct observation of consumer reactions and staff feedback. By contrast, the larger scale and operational challenges at the Sälen restaurant – such as high visitor volume, staff turnover, sick leave, and the managers' other responsibilities – presented barriers that affected the intervention's effectiveness and the analysis of the field experiment.

#### **6.2.4 Visitor Experience and Knowledge Gaps**

Appearing too 'pushy' with requests for contributions could potentially have a negative impact on visitors' experience. This was a key concern for MTB stakeholders and shaped the interventions considered and accepted in this context. Although this concern informed the second field experiment, where sign frequency and backfiring effects were tested following evidence of limited visitor awareness from the first experiment, it still hindered the design of more prominent interventions. Similar concerns about sustainability communication interfering with visitors' experience have been documented in the context of greenhushing in hospitality businesses (Ettinger et al., 2021; Font et al., 2017). My finding that providers of MTB trails in Rörbäcksnäs tend to under-communicate sustainability efforts and requests for contributions extends this discussion to other tourism contexts.

Restaurant managers also faced challenges in terms of balancing persuasive sustainability communication while avoiding greenwashing and maintaining a positive consumer experience. Despite the perception that many consumers seek climate-friendly food, and emphasis on transparent and accurate communication, concerns about customer satisfaction strongly influenced the intervention design. Managers and staff in both restaurants were

wary of being too 'pushy' (for example, via direct personal recommendations), restrictive (for example, by targeting only plant-based dishes), or inducing negative emotions among customers (such as through red carbon labels), potentially reducing the impact of interventions on guiding consumers towards the most climate-friendly option (Brunner et al., 2018; Carrero et al., 2021).

Ultimately, while providers' perspectives highlighted relevant concerns about consumer expectations in these T&H contexts, they also demonstrated the need for an improved understanding of consumers' actual preferences and behaviours to design impactful interventions. The pre-studies and field experiments in Papers 1 and 2 revealed that providers perceived tourists' willingness to contribute more negatively than it actually was, with most tourists donating and reporting positive experiences even after donation appeals were increased in Paper 2. Therefore, the commonly held belief that sustainability appeals and behaviours interfere with tourists' experiences (Ettinger et al., 2021; Font et al., 2017), was not confirmed in this setting and appeared to stem from a lack of understanding of current donation behaviour.

Conversely, providers in Paper 3 overestimated consumers' demand for climate-friendly options; this is in line with surveys and industry examples suggesting that many consumers seek such options when dining out (Daus & Clement, 2023; Feucht & Zander, 2018; Sarmiento & Hanandeh, 2018). Thus, a nuanced understanding of both provider and consumer perspectives is crucial in order to empower providers to credibly promote pro-sustainable choices in a way that enhances customer experiences (Font et al., 2021).

Overall, the findings revealed some inherent conflicts in providers' motivation to foster pro-sustainable behaviour: The aim to develop tourism and soliciting contributions without excessively increasing communication and visitors' expectations; the desire to promote pro-sustainable options for competitive advantage without imposing these choices on consumers; and the wish to design transparent interventions without fully disclosing less sustainable options. As the individual papers have shown, understanding these conflicts and the gaps between provider perceptions and consumer behaviour is crucial for addressing perceived barriers and aligning expectations. This systematic approach to bridging the awareness-behaviours or attitude-behaviours gap helps identify specific choices to target, such as certain climate-friendly dishes, and guides the design of interventions that encourage pro-sustainable behaviour while potentially adding value to consumers' experiences and fitting within the providers' goals and constraints.

### 6.3 Designing Effective Interventions

Collaboration between researchers and providers is a critical part of attempts to foster pro-sustainable consumer behaviour in T&H. The literature on sustainable T&H has firmly established that collaboration among stakeholders – such as researchers, residents, and industry experts – is essential for advancing sustainability (Getz & Jamal, 1994; Hughes & Morrison-Saunders, 2018; Tribe & Liburd, 2016). However, a significant challenge is that researchers and practitioners often operate in different social worlds, which complicates mutual understanding (Adolfsson et al., 2016). Overcoming these boundaries is crucial for integrating knowledge and developing relevant solutions to sustainability issues (Caccamo et al., 2023). In this context, behavioural interventions aimed at

encouraging pro-sustainable behaviour, similar to sustainability more broadly, are viewed in this thesis as boundary objects (Star & Griesemer 1989). These interventions provide common ground by aiming to achieve specific behavioural outcomes through subtle changes in the decision-making environment and the application of a family of theories and mechanisms. However, effectively translating these interventions into the local context – deciding what theories to apply and how to foster specific behaviours – requires insights from local stakeholders (Ball & Feitsma, 2020).

This section synthesises insights from the consumer perspective (RQ1) and provider perspectives (RQ2), exploring the relevance of behavioural theories, the role of the researcher, and the challenges and opportunities within these collaborative efforts. This synthesis provides valuable insights into the design of effective interventions (RQ3). The subsequent section summarises the applicability of behavioural interventions, specifically social norms and carbon labels, within T&H settings, along with key considerations for their design and implementation.

### **6.3.1 The Process**

A key revelation from this research is the centrality of collaborative intervention design and testing with industry partners, tailored to the specific context. Specifically, while much of the behavioural intervention literature in T&H emphasises the quantitative findings of field experiments on behavioural outcomes (Demeter et al., 2023; Fong et al., 2016; Greene et al., 2023; Viglia & Dolnicar, 2020), this research also highlights the significance of the exploratory and design stages. These stages are critical for establishing a shared intent, determining the relevance and acceptability of specific interventions,

securing provider engagement, and ensuring the smooth execution of experiments (Coghlan et al., 2023).

Firstly, this research demonstrates that effective methods for collaboration in behavioural intervention design vary depending on the context and stakeholders involved. In small destination settings with diverse stakeholders, like Rörbäcksnäs, community meetings and individual interviews proved effective for fostering mutual understanding and collaboration. In contrast, workshops were notably successful in engaging managers and staff in larger hospitality operations in Paper 3, while informal meetings worked well in a smaller restaurant setting in Paper 4. Paper 3 showed that workshops inspired by Design Thinking and Open Space present promising yet underutilised methods for challenging business-as-usual thinking and fostering engagement in sustainability interventions within commercial T&H providers.

The field experiment in Paper 3 also indicated that initial enthusiasm for sustainability initiatives may diminish under daily operational pressures, underscoring the need for sustained engagement through ongoing workshops or meetings during and after field experiments. Such collaborative commitment to sustainability initiatives not only aids in developing effective interventions but, as the literature suggests, can also enhance employee knowledge, sustainability values, and involvement in decision-making, thereby fostering a more responsible and positive organisational culture (Cantor et al., 2012; Chou, 2014; Liu et al., 2021; Raineri & Paillé, 2016). While the present research focused primarily on consumer impacts, it is important to evaluate interventions holistically, including their long-term effects on providers and their sustainability practices.

Although the integration of providers' perspectives around the boundary object of behavioural interventions improved our capacity to design and assess these interventions, it also introduced challenges related to divergent priorities and practical constraints. Compromises in intervention design and effectiveness were often necessary to adapt to specific business settings.

For instance, restaurant providers in Sälen decided to transparently label all menu items, despite their high carbon footprints, which can promote carbon literacy (Edenbrandt & Lagerkvist, 2021) but may also affect consumers' perception of the restaurant and the intervention's impact on food choices, potentially leading to substitutions. Nevertheless, this was a feasible strategy for a restaurant associated with a large hotel and few direct competitors.

Conversely, the restaurant manager in Stockholm also emphasised accurate information but chose to label only two dishes due to the higher carbon footprint of others compared to competitors' menus, which could potentially deter customers. Similar compromises related to the inherent tension between business objectives and long-term sustainability goals in T&H (Buckley, 2012; Font & McCabe, 2017; Moscardo & Murphy, 2016) also surfaced in managers' preference for cost-saving operational sustainability practices, such as food waste reduction, over potentially riskier and more expensive customer-facing interventions, like changing dish ingredients.

Although this conflict impacts the practical adoption of effective consumer-oriented behavioural interventions in the industry, longer-term collaboration and evidence of intervention effectiveness can facilitate reconciliation, as this research has shown. For example, providers in Rörbäcksnäs initially resisted increasing donation signs.



However, through collaboration and insights gained from the first experiment, they became more receptive to subsequent interventions designed to enhance visibility and impact. This process highlights the iterative nature of intervention design, where initial effects on behaviour might be compromised by operational and economic concerns. Over time, interventions evolve through negotiation and adaptation between ideal theoretical models and their practical implementation, alongside increasing provider awareness and acceptance (Favilli et al., 2015).

The challenges encountered during intervention design and experiments also present valuable opportunities for reciprocal learning, where academic insights can inform industry perspectives and vice versa. This thesis has shown how behavioural theories provide a foundational framework for intervention design, offering a common ground and 'malleable backstage boundaries' to understand the psychological drivers of pro-sustainable behaviour (Ball & Feitsma, 2020). Effectively communicating these theoretical principles, along with methodological requirements to industry partners, emerged as a crucial element for developing practically and theoretically relevant interventions and experiments. For example, discussions about the impact of different label designs, informed by existing literature, were essential for achieving a shared understanding during the workshops described in Paper 3. Similarly, insights from social norm theory were instrumental in revising the donation message in Rörbäcksnäs, which helped reconcile the providers' desire to maintain a fair voluntary approach with their objective of increasing visitor contributions, while also addressing relevant research gaps.

Involving providers directly in the field experimental design process enabled the exchange of methodological insights, such as discussions about control groups and measurement techniques. This facilitated not only the design of robust experiments but also providers' interpretation of results, as well as the adoption of specific tools such as the carbon calculator Klimato in Paper 3. I initially suggested Klimato for its growing prominence in the food sector and transparent methodology (Klimato, 2024). Joint meetings with Klimato representatives, the restaurant manager, and researchers enabled a thorough exchange of knowledge about the tool's benefits and how it would be utilised in the research project, which encouraged the manager to consider its long-term adoption. This exchange of industry insights and academic research processes is crucial for promoting the integration of relevant practical tools in intervention design and encouraging their sustained use among practitioners.

Furthermore, by emphasising the need for interventions to be both theoretically sound and adapted to the nuanced complexities of real-life settings, this research has highlighted the inevitable compromises involved in balancing the deeper validation or rejection of specific constructs or theories with practical considerations, particularly in field experimental studies. This interplay between theory and praxis also implies the need for flexible theoretical frameworks. Having malleable boundaries in the theoretical background, but clearer boundaries in the practical implementation within specific contexts, allows space for knowledge integration and adaptation based on real-world constraints and empirical findings (Ball & Feitsma, 2020). For example, the dynamic interaction between theory and practice observed in the changing norms in Papers 1 and 2 emphasised the

need for ongoing empirical validation and adaption of interventions in this setting.

This also shows that the researcher's involvement in designing interventions needs to be dynamic, responsive, and continually informed by evolving sustainability practices in T&H. Such an approach ensures that interventions draw on established behavioural principles while also adapting to emerging sustainability trends and industry insights, such as new carbon labelling practices, resulting in more nuanced and effective interventions.

### **6.3.2 What Works Where?**

This section summarises the effectiveness of social norm and carbon label interventions, as well as endorsement, based on the empirical findings of the individual papers and informed by the literature. It also suggests the contexts in which such interventions may generally be applicable, along with key considerations.

#### **Social norm interventions**

- Social norm interventions, including *descriptive and injunctive norms*, appear to be effective at encouraging donation behaviour among mountain biking visitors.
- The *physical salience* of interventions, including the frequency and placement, influences their outcomes.

#### **Application:**

- Social norm information can effectively encourage pro-sustainable behaviours in situations where the behaviour is not directly visible, particularly if visitors directly use and benefit from positively contributing to public goods, such as recreational trails (Heldt, 2005, 2010), museums (Martin & Randal, 2008), or park conservation (Alpizar & Martinsson,

2010).

- Reminders, including social norm information, may be particularly effective when the behaviour is to be carried out later or throughout the experience. These reminders can shift attention towards engagement and influence beliefs about the importance and social desirability of the behaviour (Gravert, 2021). This is relevant in open-access contexts, such as nature-based activities, where tourists engage in long, individual activities.

**Considerations:**

- Papers 1 and 2 emphasise the dynamic nature of social norms, requiring monitoring and adaptations of social norm interventions.
- For normative reminders to be effective, receivers need sufficient intrinsic or extrinsic motivation; otherwise, they may create psychological costs such as guilt for not meeting social norms or personal standards (Gravert, 2021). Thus, the message content should first be tested for effectiveness to avoid adverse effects on the targeted behaviour, consumer experience, provider image, and possible income (Ettinger et al., 2021; Richter et al., 2018).

**Carbon labels**

- *Carbon labels* show limited direct impact but have the potential to influence a segment of consumers towards choosing lower emission options, in an à la carte restaurant at a tourism destination. This aligns with studies conducted in diverse out-of-home dining settings (Brunner et al., 2018; Lohmann et al., 2022; Slapø & Karevold, 2019; Spaargaren et al., 2013).
- Combining carbon information with *endorsement* demonstrates a more pronounced effect on climate-friendly food choices in a

general à la carte lunch restaurant.

**Application:**

- Carbon label interventions appear to be effective in restaurants when tailored to the specific context, such as by combining carbon footprint information with endorsements from a fitness influencer in a healthy fast-food restaurant.

**Considerations:**

- The potential long-term influence of carbon labels needs to be considered. Scaling up could increase their success as consumers' familiarity with the label increases (Feucht & Zander; 2018; Grunert et al., 2014; Li et al., 2017) and competitiveness among providers to follow suits intensifies, leading to greater adjustment of dishes to promote low-carbon options and greater net effect on emissions. This is particularly relevant in cases like Klimato and Sweden, where the tool's utilisation in hospitality businesses has increased significantly in recent years (Allen, 2023; Klimato, 2024).
- Even if carbon labels may induce initial reactance among some consumers, leading to minimal net effects in the beginning (Edenbrandt et al., 2021; Festinger, 1957), these initial reactions to the intervention may lead to reflection and transformation (Banerjee et al., 2022; Bruns & Perino, 2021). Accordingly, impacts on consumer behaviour, satisfaction, and profitability need to be monitored.

**Personal endorsement**

- *Personal recommendations* from staff appear more effective than written endorsements in terms of influencing climate-friendly choices of restaurant customers, aligned with studies leveraging this form of social influence in other pro-sustainable food choice (Cai et al., 2021), food waste (van Herpen et al.,

2021), and resource-conservation in accommodation contexts (Warren et al., 2017).

**Application:**

- This type of intervention appears to be particularly effective in hospitality settings where frontline staff and customers interact directly, such as restaurants and other service contexts like travel agents (Font et al., 2021), as personal recommendations may enhance the credibility of information and add value to the customers' experience (Barnes et al., 2016; Cai et al., 2021; Cialdini, 2009).

**Considerations:**

- In the context of food choices, offering and targeting several pro-sustainable options with carbon information or endorsement may prevent the need for consumers to switch to drastic alternatives that may not align with other priorities, such as high-protein protein food (Lea & Worsley, 2001), and risk triggering reactance or moral licensing effects (Osman et al., 2021).

**Considerations across cases**

*Context-Specificity*

- The sense of *efficacy* related to the sustainability issue and target behaviour needs consideration. The impact of pro-sustainable behaviours like donations for the maintenance of local MTB trails is more direct than behaviours related to broader sustainability issues, such as climate change. As this study and prior studies have indicated (Kollmuss & Agyeman, 2002; Sawitri et al., 2015; van Valkengoed et al., 2022), the latter requires more effort in assuring individuals that their choice makes a difference and making the pro-sustainable choice

- personally relevant to the specific audience.
- The alignment among the specific *T&H context*, target behaviour, and intervention requires consideration. Normative goals aligned with pro-sustainable behaviours are likely to be more salient in uncommercialised nature settings (Lindenberg, 2006, 2008), which makes norm-based interventions to reinforce these behaviours applicable. By contrast, consumption in commercial hospitality establishments, such as à la carte restaurants or hotels, generally prioritises gain goals and hedonic goals (Fechner et al., 2023; Rodriguez–Sanchez et al., 2020), meaning that relevant self-benefits of normatively desirable pro-sustainable choices should be highlighted to make these desirable options for consumers.
  - Ultimately, providers need to position targeted pro-sustainable choices to engage the specific target market, especially if they are related to broad challenges like climate change, to increase intervention effectiveness and add consumer values. For example, pro-sustainable food options may be linked with health benefits, as exemplified in Paper 3 (Carrigan & Attalla, 2001), or possibly with heartiness in establishments like a burger and pizza restaurant at a tourist destination (Fechner et al., 2023).

### *Transparency and Accuracy*

- Transparent and accurate interventions are crucial for *consumer trust* and *provider credibility*. While T&H literature emphasises providers' preference for easy-to-implement, cost-effective interventions (Dolnicar; 2020; Greene et al., 2023; Souza-Neto et al., 2022), and nudge literature highlights consumers' desire for transparent interventions (Mont et al., 2014; Sunstein et al., 2018), the present research adds that providers also highly

value transparency and accurate information.

- *Transparent* choice-preserving interventions like social norm information and carbon labels may be more ethically applicable than low-engagement nudges like defaults for behaviours that consumers care about, such as donations or food choices, considering both consumer and provider ethics.
- Related to discussions about greenwashing (Caradonio, 2022; Gay et al., 2023), ensuring *accurate information* through close collaboration in intervention design is crucial in order to preserve providers' image and foster consumer behaviours with meaningful sustainability impacts.

### ***Monitoring and Adaption***

- Having highly effective interventions is a *dynamic process*, not a static outcome. Some interventions may need adaption if they are initially ineffective, while others might be effective now but require future adjustments due to changes in consumer behaviour and provider demands and constraints.
- *Collaborative intervention design and testing processes* are crucial, where behavioural theories and concepts serve as adaptable guides and empirical realities of stakeholders' motives and constraints inform intervention mechanisms and experimental methods. This approach makes it possible to design interventions that are responsive to the unique challenges posed by diverse T&H settings.

## **7 Conclusion**

The aim of this thesis was to study pro-sustainable consumer behaviour in tourism and hospitality (T&H) settings, drawing insights from tourism and consumer behaviour theory and behavioural economics. To achieve this, field experiments were



conducted in two distinct T&H contexts, examining consumers' drivers and barriers to pro-sustainable behaviour, along with investigating providers' perspectives on making pro-sustainable options more available and attractive. The collective findings offer methodological insights into collaborative intervention design and testing, provide practical recommendations for practitioners and policymakers, and contribute to knowledge on pro-sustainable consumer behaviour, both within T&H and more broadly.

Figure 5 presents a framework that outlines key steps and considerations in designing and testing behavioural interventions to foster pro-sustainable consumer behaviour, illustrating the methodological contributions while presenting a base for the theoretical and practical implications of this research. Although the steps follow a general sequential order, the process is iterative, and it may be necessary to revisit earlier stages depending on the specific context and field conditions. The framework draws inspiration from Dolnicar (2020) and Steg and Vlek (2009) but extends beyond environmental concerns. It also emphasises the integration of providers' perspectives, ensuring that interventions are tailored to specific real-life contexts. While based on studies in T&H settings, this framework may also assist researchers, providers, and policymakers in other out-of-home consumption domains, such as retail, workplace canteens, or public transport, where meso-level actors can influence consumers for societal, environmental, and consumer benefits.

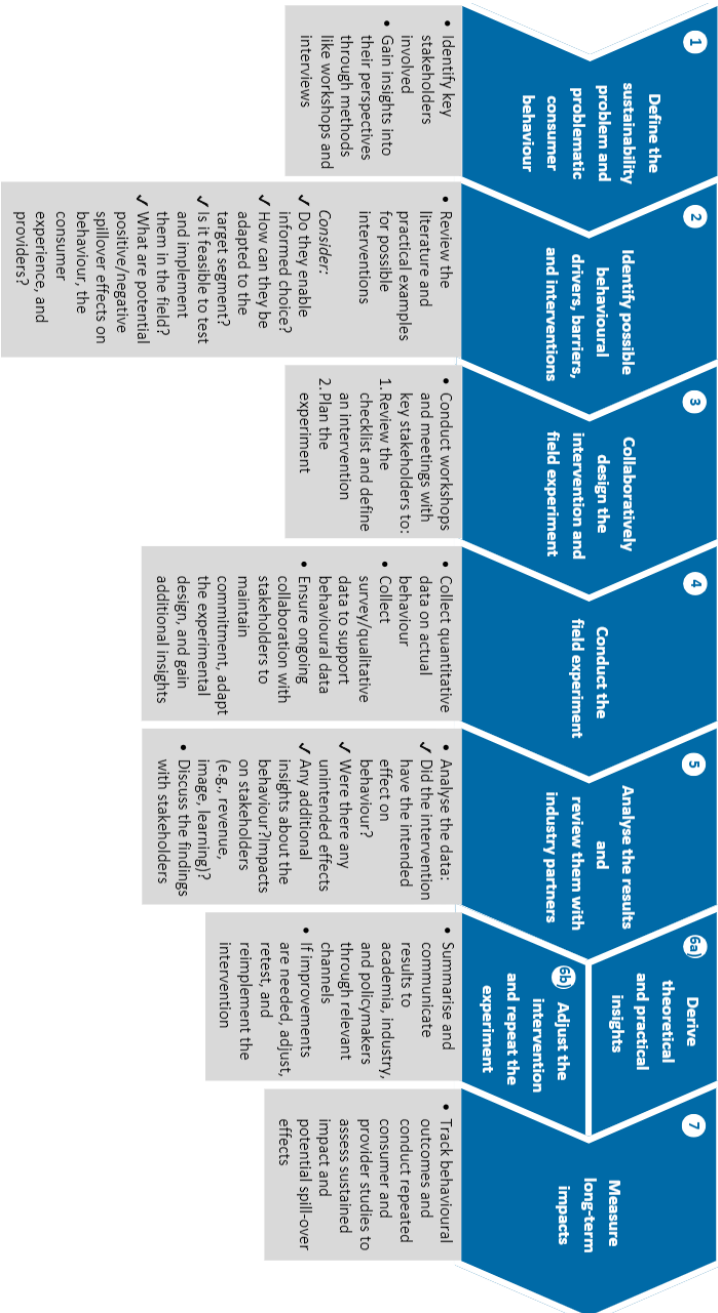


Figure 7: Framework for designing and testing behavioural interventions to foster pro-sustainable consumer behaviour in T&H

The process begins with the exploratory and design stages of behavioural interventions (Parts 1, 2, and 3), which are often underreported in the T&H literature but are critical for ensuring contextual relevance and feasibility. The stages emphasise the need for stakeholder involvement and for addressing factors like practical constraints, trade-offs between informed and quick behavioural changes, and potential spillover effects, including impacts on consumers' experience. Qualitative methods like Design Thinking, Open Space workshops, and interviews can facilitate the co-creation of interventions that resonate with stakeholder needs and leverage their customer insights. By integrating these practical considerations with behavioural theories, field experiments are better positioned to be both relevant and adaptable to shifting sustainability knowledge, industry practices, and evolving contexts.

When testing interventions in the field (Part 4) and analysing the findings (Part 5), combining quantitative data on actual behaviour and revenue with qualitative methods like observation and consumer interviews offers a comprehensive understanding of an intervention's effects. This approach goes beyond immediate consumer responses to consider impacts on providers and potential spillover effects.

Although it can be challenging to sustain stakeholder engagement, it is crucial to identify effective channels for ongoing collaboration throughout the experimental process and beyond. While monitoring intervention effects after the experimental phase (Part 7) is limited within this thesis, it is essential for assessing long-term impacts, advancing knowledge on pro-sustainable behaviour and guiding future interventions.

Researchers play a crucial role in bridging the gap between theory and practice, ensuring that interventions are theoretically grounded,

and that knowledge of behavioural theories is developed while addressing real-world challenges. Methodological transparency and rigour, alongside effective communication of findings, are essential for ensuring validity, reliability, and knowledge exchange between academia and industry. I hope that this framework will inspire researchers to embrace interdisciplinary approaches and collaborative methodologies, particularly field experiments, to effectively address sustainability challenges and advance knowledge in T&H, consumer behaviour and behavioural economics. The following sections conclude this research process with key theoretical and practical insights, addressing Part 6(a) of the framework.

## 7.1 Theoretical Implications

The main theoretical implications of this thesis are new insights into the drivers and barriers to pro-sustainable consumer behaviour in T&H. By identifying both context-specific factors and broader behavioural patterns, these insights also contribute to a deeper understanding of pro-sustainable behaviour across various other unfamiliar and experiential out-of-home consumption settings.

One significant insight pertains to the dynamic nature of social norms and their influence on pro-sustainable behaviour in diverse contexts. Through empirically examining the relatively unexplored domain of donations for publicly accessible mountain biking trails and comparison with climate-friendly food choices in restaurants, this thesis underscores the pivotal role of social norms in shaping pro-sustainable behaviours in out-of-home settings. In such unfamiliar consumption contexts, raising the salience of social norms can inform consumers about socially expected behaviours, enhance perceptions of social support, and bolster perceived efficacy.

Furthermore, the comparative analysis of social norm interventions across distinct T&H contexts demonstrates the variability in social influences on pro-sustainable behaviour. In less observable settings, such as open-access nature areas, pro-sustainable behaviour may be individually supported, but normative cues are essential to address uncertainty about other's behaviour. Conversely, in public settings like restaurants, personal social interactions are influential in terms of driving and hindering more sustainable choices. Therefore, effectively leveraging social influence to foster pro-sustainable behaviour requires alignment with the specific social dynamics and evolving norms of each environment.

Moreover, this research broadens the traditional focus of behavioural intervention research in T&H, which often emphasises the hedonic nature of tourism and its negative impacts on pro-sustainable behaviour. By including nature-based activities and general restaurants, the study reveals the significance of nuanced contextual factors. The findings underscore that, in certain settings, such as nature-based recreation, visitors exhibit more of an awareness-behaviour gap rather than the commonly observed attitude-behaviour gap seen in commercial hospitality. This distinction emphasises that pro-sustainable drivers in T&H are dynamic and context-specific, suggesting that aligning sustainability information with both overarching and context-specific goals in experiential consumption contexts can support pro-sustainable behaviour and enhance, rather than clash with, consumer experiences.

This research also sheds light on the drivers and barriers that T&H providers face in fostering pro-sustainable consumer behaviour, addressing a gap in the behavioural intervention literature. It reveals differences between commercial providers, who are primarily driven

by competitive pressures and consumer preferences, and non-commercial providers, who focus on the broader socioeconomic benefits that pro-sustainable tourism can bring. This has significant implications for the type of interventions that can be implemented and sustained over time, which can ultimately influence how pro-sustainable consumer behaviours are promoted. Additionally, common challenges, such as resource constraints, preserving providers' values, and maintaining transparency while ensuring consumer satisfaction – must be addressed in order to effectively encourage pro-sustainable behaviour within T&H settings. This underscores the need for an integrated approach that aligns provider goals with consumer expectations to foster sustained pro-sustainable behaviour in the sector.

## 7.2 Practical Implications

This research offers several practical recommendations for designing behavioural interventions aimed at fostering informed pro-sustainable behaviour in T&H settings, as well as other out-of-home consumption contexts characterised by unfamiliar and experiential elements.

To effectively promote pro-sustainable behaviour, it is crucial to position sustainability issues in ways that resonate with the dominant motives and preferences of target segments within specific contexts. For example, in settings where pro-sustainable behaviour directly benefits the individual and the collective, emphasising the contributions of others through descriptive norms can reinforce the efficacy of such behaviours and enhance the perceived value for the participating consumers. Relevant examples include public parks, recreational areas, museums, and events. In commercial T&H

settings, such as restaurants and hotels, sustainability information must be tailored to the establishment's style and target segment to demonstrate how pro-sustainable options align with consumers' personal benefits and promote informed choices. This approach can be extended to other consumption settings with well-defined target segments and a variety of options, such as specialised tour operators and travel agencies. It is also important to offer several pro-sustainable options in experiential settings where consumers generally enjoy broad freedom of choice, to prevent them from feeling restricted and ensure that providers do not have to compromise their business style and values.

Furthermore, involving front-line staff in sustainability initiatives and empowering them to endorse pro-sustainable options credibly during interactions with consumers presents a significant yet underutilised opportunity to influence consumer choices while enhancing the overall experience.

This research has shown that framing sustainability as a relevant and desirable aspect of the consumer experience requires an understanding of the target audience's preferences and priorities within the specific context, which can be gained through staff insights, observation, surveys, or interviews. Furthermore, practical considerations in intervention design, such as transparency, information accuracy, placement, frequency, and ongoing adaptation, are critical for minimising negative consumer reactions and ensuring sustained effectiveness and ethical application.

## 7.3 Limitations and Recommendations for Future Research

This thesis, like any research endeavour, has certain limitations, which are primarily outlined in the methodology chapter (Section 4.3.4) and the individual papers, inspiring areas for future research.

Firstly, consideration of longevity of behaviour change in the context of sustainability is a key aspect, which I stressed in behavioural intervention design. However, I was only able to address this through my choice of behavioural interventions, targeting conscious information processes and deliberate decision-making. Longer-term studies assessing sustained behaviour change, including the effects after intervention removal, are necessary to evaluate the efficacy of different intervention types for pro-sustainable consumption in T&H over time.

Secondly, the research was limited to two specific cases within Sweden. Although pro-sustainable behaviours and behavioural interventions necessitate a context-specific approach, replicating these interventions and field experiments in diverse contexts with similar sustainability challenges would enhance understanding and validate intervention impacts on pro-sustainable behaviour. This could, for example, reveal similarities and differences between cultures. In particular, less explored interventions in pro-sustainable consumption, such as endorsement, require further investigation to assess their influence across different segments. Moreover, given that this is one of the few studies in behavioural change literature within T&H that extends beyond hotels and focuses on behaviours not solely related to environmental sustainability (Khan et al., 2024; Liu et al., 2023), it is vital to expand research to include diverse contexts such as



nature-based activities, airplanes, or cultural attractions. This broader focus will enhance understanding of consumer engagement in various pro-sustainable behaviours and how different settings can either encourage or hinder these behaviours, facilitating more comprehensive and impactful changes in T&H.

Thirdly, while this research applied Goal-Framing Theory to better understand pro-sustainable behaviour in different T&H settings, it did not directly measure consumers' goals and salience of frames. Recent studies suggest that Goal-Framing Theory could enhance understanding of pro-sustainable consumption in T&H and the impact of goal activation on behaviour (via nudges, for example) (Onwezen, 2023; Thøgersen & Alfinito, 2020; Trabandt et al., 2024). Further formal application of this theory could offer valuable insights into encouraging pro-sustainable behaviour aligned with consumers' dominant goals, thus enhancing their experiences and reinforcing such behaviour.

Fourthly, the investigation of spillover effects – that is, the effects of behavioural interventions on other, non-targeted behaviours – was beyond the scope of this research and is underexplored in the pro-sustainable consumption literature (Khan et al., 2024). Studying these effects would enable a more comprehensive understanding of pro-sustainable behaviour and maximise the impact and cost-effectiveness of interventions while mitigating unintended consequences.

Fifthly, practice-based approaches have recently gained attention in pro-sustainable consumption research but are often contrasted against behavioural interventions like nudges and remain underutilised in policy and behavioural change studies, especially in

T&H. However, these approaches offer a valuable perspective for examining the roots of patterned behaviours and fostering long-term changes. Further research is needed to explore how integrating practice-based approaches with behavioural interventions can enhance pro-sustainable consumption and production in T&H and related contexts.

Lastly, this research highlights the potential of collaborative intervention design to engage providers with sustainability issues, potentially leading to greater awareness and pro-sustainable behaviour on their side (Cantor et al., 2012; Knežević Cvelbar et al., 2022; Liu et al., 2021). However, in most extant experiments, the collaborative approach, particularly through Design Thinking workshops, has either not been applied or has gone unreported (Coghlan et al., 2023). More research is needed into the impacts of collaborative sustainability initiatives on employee and manager behaviour. In line with this, it would be valuable to explore how employees can be trained to support or act as interventions in influencing pro-sustainable consumer behaviour, such as by making direct recommendations for more sustainable choices.

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