07/23

RAPPORT
REPORT

The Tourism Industry in Vestland during the Green Transition: Stakeholder Perspectives on Challenges and Opportunities

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SNF Report No. 07/23

The Tourism Industry in Vestland during the Green Transition: Stakeholder Perspectives on Challenges and Opportunities

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SNF-project No. 10105:
"The Tourism Industry in Vestland during the Green Transition"

The project is financed by Vestland Regional Research Fund

CENTRE FOR APPLIED RESEARCH AT NHH

BERGEN, DECEMBER 2023

SNF Report No. 07/23

ISBN 82-491-1103-9 Online version
ISSN 2704-0399 Online version

ABSTRACT

This report discusses competitiveness, sustainability, conflict resolution, and technological integration under the green transition. The purpose is to enable tourism management in Vestland in correspondence with environmental and economic considerations and the evolving preferences of visitors. The primary method is interviews, supported by input from a reference group. We conducted 20 interviews with 22 informants from destination companies, tourism firms, and public and nature conservation interests, while the reference group included seven informants from five organizations.

Destinations in Vestland aim to attract high-paying tourists focusing on nature experiences and diverse tourism products. Competitive challenges include seasonal constraints, sustainability concerns, recruitment, funding, competition in the face of price pressures, and developments in circumstantial contexts. Respondents call for taking more advantage of nature in their marketing and a more complete product spectrum. Main sustainability challenges include dependence on carbon-intensive traveling from foreign markets and tourism crowding at specific locations, causing various environmental consequences. Stakeholders express a need for improved visitor management, potentially through the sustainable destination certification, which receives positive feedback. Conflicts between tourism interests and natural values in Vestland include the impact on vulnerable wild reindeer habitats, with ski resorts, gondolas and recreational homes encroaching on their territory. Cruise ship emissions and problems with the zero-emission requirement in world heritage fjords highlight the need for tourism management to consider all effects on markets and nature. Several respondents ask for more stakeholder involvement in energy project developments and land use conflicts to improve outcomes. Most respondents see benefits in various technological applications, including software, equipment, and digitalization of internal work processes, but they also bring coordination issues and frustrations with online travel agencies. They highlight the need for more coordination, cooperation, interactivity in digital presentation, and enhanced technological infrastructure, especially in electric charging facilities and electronic communication.

PREFACE

The natural aspect constitutes an essential attribute of the tourism product of Vestland county in Western Norway. Nevertheless, the regional tourism industry faces many challenges in handling the green transition over the coming years. In this project, we examine the green transition in tourism, focusing on quality competitiveness, sustainable nature experience, industry-nature conflicts, and technological developments.

The research project constitutes a cooperation between the SNF – Centre for Applied Research at NHH (*Samfunns- og næringslivsforskning, SNF*) and the Institute of Transport Economics (*Transportøkonomisk institutt, TØI*). In addition, five stakeholders participated in the project, including Fjord Norway, Vestkand county Administration, the Norwegian Nature Centre in Hardanger, the Confederation of Norwegian Enterprise (NHO) Vestlandet and Up Norway.

The project was funded by Vestland Regional Research Fund (RFF Vestland), except for stakeholders' participation, which the stakeholder partners themselves funded. This user report and an associated research article constitute our deliveries in the research project "The Tourism Industry in Vestland during the Green Transition" associated with RFF's call for preliminary research projects.

Researcher Endre Kildal Iversen at SNF was the project manager and leading investigator on sustainable nature experiences at the destination level and conflict resolution between industry and nature. Partner at Vista Analyse and associated senior researcher at TØI, Rasmus Bøgh Holmen, was a project co-worker and leading investigator on the competitiveness of the tourism industry and technological possibilities and solutions. The project was followed by a reference group consisting of Marianne Johnsen and Stein Ove Rolland (Fjord Norway), Anne Silje Sylvarnes and Marta Rongved (Vestland county), Oddvar Brakestad (Norwegian Nature Centre in Hardanger), Wenche Salthella (NHO Vestlandet) and Torunn Tronsvang (Up Norway). In addition, 22 informants from twenty organizations were interviewed. The final report was proof-read by Anna Herzog, a professional and self-employed proof-reader.

We thank all the mentioned for their contribution to our project. We take responsibility for all errors and deficiencies.

Endre Kildal Iversen, SNF - Centre for Applied Research at NHH
Rasmus Bøgh Holmen, Vista Analyse and Institute of Transport Economics (TØI)
December 2023

CONTENT

1. EXECUTIVE SUMMARY WITH CONCLUSIONS

The report delves into the complexities of Vestland county's tourism industry, addressing issues of competitiveness, sustainability, conflict resolution, and technological integration. Understanding these facets is crucial for shaping a sustainable tourism sector aligning with the evolving preferences of visitors.

The primary method employed is interviews, supported by input from a reference group. The reference group was crucial in advising on information collection and interpreting results, with four meetings held throughout the project. The group included seven informants from five organizations. The authors conducted 20 interviews with 22 key informants in the tourism industry, covering destination companies, tourism firms, and public and nature conservation interests. The interviews were semi-structured, allowing interviewees to emphasize topics of their expertise. The data analysis follows a general inductive approach, enabling the transformation of raw data into structured and reliable results. The informants represent diverse roles within the tourism industry, providing a comprehensive perspective on the research topics. Based on the interviews, we provide a descriptive review of the current status and developments before we present our informants' advice on each topic.

Competitiveness of the Tourism Industry: The destinations in Vestland county target tourists from Norway, the Nordics, and Western Europe, emphasizing high-quality experiences and a diverse product spectrum. Nature experiences are central to the region's appeal, attracting tourists interested in both active and passive engagement. However, challenges with seasonality, sustainability concerns, fierce price and quality competition, funding, recruitment, and the circumstantial context impact the industry's efficiency and long-term viability.

Sustainability Issues and Solutions in Tourism Management: Sustainability is a critical concern in tourism, with businesses focusing on reducing carbon emissions from transportation, managing crowding in natural areas, and addressing conflicts between tourism and, nature and other industries. Certification of sustainable destinations and businesses should reduce sustainability issues, but challenges related to costs and inclusivity must be addressed. The interviewees emphasize the need for a comprehensive and integrated approach to balancing tourism interests with nature preservation.

Conflict Resolution between Industry and Nature: Conflicts between tourism development and natural values, especially in sensitive areas like Hardangervidda, highlight the need for inclusive decision-making and collaboration between municipalities, the tourism industry, and local communities. We advocate a balanced and sustainable coexistence between the tourism industry and the environment, emphasizing the role of state-level decision-making in preserving pristine nature.

Technological Possibilities and Solutions: The role of technology in tourism is examined, including technologies enhancing the tourism experience and the organization's work, digital marketing and booking systems, and technological surroundings. While our respondents express optimism about the benefits of technology, concerns are raised about potential malinvestments, coordination challenges, access to digital competence, and the need for enhanced infrastructure.

1.1 Competitiveness of the Tourism Industry

Destinations aim to target tourists with a high willingness and ability to pay through high quality and a broad product spectrum. Tourists from Norway and the rest of the Nordics and Western Europe constitute key markets for all tourist destinations in Vestland county, but relatively popular destinations are generally more diversified across markets. Tourists seeking to experience nature actively or passively and family tourists are crucial. As tourism primarily takes place individually, some respondents see the potential for more group tourism.

For destinations other than the mountains, the main tourist season is during the summer from approximately April/May to September/October. While capacity is typically constrained in the peak season, an insufficient number of visitors may force firms to close in the off-season. In addition, firms aim to prolong tourists' stays by promoting local service supply and sites. Business tourism and measures supporting season extension are crucial for facilitating year-round tourism and associated professionalization in the industry. Measures proposed by the informants to increase tourism in the off-season include cultural and business events, marketing of all seasons and targeting wealthy retired tourists.

Nature experiences constitute the most important attribute of Vestland as a tourist region, attracting tourists to the region and for the tourism products offered at the destinations. To build a complete tourism supply and local tourism spending, our informants propose supplementing nature products with cultural products such as local food and drinks, cultural attractions, and events.

The interest in Western Norwegian nature has been enhanced by changes in the climate, as well as increased attention towards environmental and sustainability concerns. Some respondents call for environmental sustainability marketing when promoting tourism products, but many are aware of the substantial climate footprint of foreign tourists. An increased focus on sustainability and environmental concerns also influences regulations and customer preferences. To some extent, sustainability measures at the firm level are considered a necessity. However, it is pointed out that not all firms can be in this niche and that not all commitments to sustainability appear genuine. Besides, some respondents believe that consumers' environmental concerns are often exaggerated in marketing analysis and investigation reports, and some sustainability reporting is overly bureaucratic.

Many tourism firms struggle to recruit competent personnel, competing on working conditions with the public sector and on wage levels with other parts of the private sector. The challenges are particularly pronounced in rural areas since the supply of welfare, infrastructure, and services is limited, and finding work for two spouses is more complicated. As recruitment measures, respondents propose branding, networking, offering fringe benefits to employees, enhancing the work environment, highlighting unique natural surroundings, and sharing key competence among small firms. In addition, offering compelling work tasks, delegating responsibility, work rotation and stability are put forward as measures to reduce turnover. The tourism industry also contributes to a more attractive labor market and residential area, in terms of a broader supply of services within active and cultural experiences, food and drink, trade and transportation.

Firms in Vestland seek financial capital to introduce and promote new products, invest in new fixed capital inputs, and renovate their properties. Many businesses experience fierce price competition from abroad and challenges in attracting new financial capital. Some respondents see the choice between consolidation and independence as a trade-off between professionalism and uniqueness.

The tourism industry in Vestland is subject to a wide range of changes in the surroundings regarding societal events, the international economy, regulations, external marketing efforts, technology, and transportation. Some respondents believe that world events have forced the tourism industry in Vestland to become more flexible and adaptable to changes. Other respondents believe that tourism firms may gain from actively responding to exchange rate fluctuations and hedging between foreign markets.

Limitations in accessibility related to aviation capacity and local transportation are perceived as competitive bottlenecks by many, especially in remote areas. Key public measures proposed in this regard are seamless integration of transportation solutions and more flexibility in regulations concerning last-mile transportation and transportation to tourist destinations. Particularly in the peak season, destinations seek an efficient spread of tourists and an expedient connection to gateways and hubs.

While respondents are generally satisfied with the marketing efforts of Fjord Norway, most are both frustrated and resigned towards what they perceive as largely irrelevant and unresponsive marketing efforts and analyses from Innovation Norway and Visit Norway. Respondents stress the importance of cooperation with neighboring regions, the capital region, other coastal sites, and international marketing firms in the case of large firms.

1.2Sustainability Challenges in Tourism Management

Our respondents argue that transportation to Vestland from other countries is the most complicated sustainability issue. For most people, Vestland is too far from international markets to travel by train, electrical buses or other low-emission transport methods. Airplanes, cruises, and private cars will remain the dominant modes of transportation for foreign tourists to enter Vestland for many years to come. One viable way of reducing carbon emissions is to change the composition of tourists. In their shared strategy, the tourism industry in Vestlandet targets longer tourist stays and more year-round tourism. Another way would be to target tourism growth from Norway or Scandinavia rather than tourists from America, Asia, or southern Europe.

Tourism traveling within Vestland is primarily by car, bus, or boat. The electrification of the car fleet in Norway is underway, and charging infrastructure is already in place. Car ferries are increasingly electrified in Vestland, while the bus fleet and the speed ferries are planned to be electrified in the coming years. Thus, in the not-so-distant future, tourist travel within Vestland should be associated with far lower carbon emissions than today, given that future public policies provide the charging infrastructure and financial incentives for electrical bus fleets and speed ferries, as promised.

Another sustainability issue for the tourism industry is crowding, specifically in nature. Visitors should be more spread out over the year and across destinations to increase the benefits and reduce the costs of tourism. Interviewees report crowding issues across the most famous destinations in Vestland during summer. At the same time, there are too few tourists the rest of the year, leading to extensive use of seasonal workers who live elsewhere, while the communities in the region need permanent residents. Further, crowding in nature leads to littering, vegetation trampling, and safety issues. The lack of responsibility for visitor management in large parts of Vestland's nature is a challenge. Most interviewees express the need to improve visitor management and the capacity to handle tourists and would accept the introduction of a tourism tax to finance this.

The destination leaders are very positive towards the certification of sustainable destinations. The certification process has increased awareness, improved sustainability, and helped marketing efforts. An essential motivation behind Innovation Norway's funding of the certification process is to offer destinations the tools to work systematically with sustainable development. However, neither the destination leaders nor the other interviewees mention the current destination organization as suitable for handling future visitor management or the income from a potential tourism tax. Several interviewees call for cooperation between the public and private sectors and nature managers to handle crowding in nature without mentioning the destination management organizations already in place.

Tourism businesses are generally positive towards business sustainability certification due to its effects on awareness and knowledge, but they also raise some serious issues. Several business representatives are concerned about the certification process becoming too costly regarding time and money spent on paperwork. Consequently, smaller businesses that have devoted considerable resources to becoming sustainable do not have the opportunity to pursue certification for themselves. On the other hand, a few businesses point out that the bar to becoming certified is too low, hampering the incentives to reduce the environmental footprint beyond the requirement.

1.3 Conflict Resolution between Industry and Nature

The conflicts between tourism interests and natural values in Vestland are multi-faceted and complex. The most prominent issue revolves around the impact of tourism development on the vulnerable wild reindeer habitat in Hardangervidda, where gondolas and ski resorts encroach upon their territory, stressing an already endangered species. The development of recreational homes in the mountains also leads to changed landscapes, the loss of wilderness and increased pressure on other wildlife.

Cruise ships are associated with tourism crowding and substantial emissions. The Norwegian Parliament enacted a zero-emission requirement for tourist ships and ferries in world heritage fjords starting in 2026, although the some suggested alternative fuels will most likely be allowed in a transitional arrangement until 2035. Handberg et al.'s (2022) analysis of the impacts of the geographically limited requirement predicts little effects on national cruise emissions due to a relocation of emissions and tourism from the world heritage fjords to other cruise ports in Vestland. Thus, although the restrictions aim to improve cruise sustainability overall, the policy will primarily affect the world heritage fjords and probably not lead to emission reduction in Norway or globally. These issues underscore the need for a more comprehensive approach to sustainable tourism development, analysing and accounting for unintended effects on markets and nature both at the destinations and in the surrounding regions.

Additionally, conflicts between tourism and other industries' use of nature, such as wind and hydropower projects, aquaculture, and mining, further complicate the scenario. The tourism industry expresses concerns about the adverse effects of these developments on the region's natural beauty and scenic landscapes, which can ultimately impact tourism revenues. Given the urgent demand for clean electricity production, the needed electrification, and the ongoing energy crisis in Europe, the government considers speeding up the new energy development projects to be critical. However, due to the negative consequences on nature and tourism, local resistance restrains the scale of new green energy production. Increased democratic involvement in energy planning can help reduce conflicts, yet local legitimacy depends on project processes and outcomes. Local interests, such as the tourism industry, must be heard and adequately compensated to foster acceptance of new renewable energy projects. There is a need to research and design decision processes that ensure legitimacy for wind power projects, improving democratic involvement and compensation schemes.

The advice from informants emphasizes the importance of inclusivity in decision-making, with a call for stakeholder and citizen involvement. Collaboration between various stakeholders, including businesses, destination companies, municipalities, and counties, is essential for steering the tourism industry and society towards more sustainable practices. Balancing economic and environmental values is a challenge in management across destinations and regions. We recommend improving land use policies in Norway to improve the consideration of national environmental values in local decision-making. The inherent problem is the local management of regional and national public goods. The recommended solution is strengthening the protection of nature or incentivising municipalities and landowners to safeguard nature, for instance, through taxing the use of nature or subsidizing its protection. The guiding principle must be to align local and national interests. Elevating decision-making to the state level, especially for projects that could adversely affect pristine nature, is also recommended.

1.4 Technological Possibilities and Solutions

A considerable minority among our respondents express skepticism towards the exaggerated use of technology in tourism products and warn against misinvestments in technology. Many also stress the importance of having a local host and experiencing pure nature without digital disturbances. Still, the majority of interviewees see technological possibilities in their product supply. Several types of software are put forward in this regard, such as GPS-based tourism information, safety information, seamless interactive tourism solutions, key cards, public transportation, seamless payment solutions, electrical charging facilities, taxi services, and virtual reality. Whereas payment apps are generally considered a mature success, many worry about coordination challenges concerning sharing tourism information and seamless integration of public transportation apps.

For mobile apps to be considered successful, they should either involve payments or contribute to attracting more travelers. Apps are expensive to develop and should ideally be coordinated between local actors to ensure a wider range of use areas. Key attributes for successful apps mentioned by the informants include functionality and interoperability, seamlessness, and informativity. Other features considered to be important include the marketing of the app itself, and the apps' abilities to promote tourist products and sites in the products' surroundings.

Technology equipment constitutes another type of technology supporting tourism experiences, for example electrical means of micro-mobility (e.g., electrical boats and electrical scooters) and the Internet of things (e.g., drones and encyclopedias with tourist information). Such tools sometimes involve battery challenges, but these could be solved by for instance wireless electricity solutions. Smart electrical solutions are also highlighted as contributors to more efficient operations, particularly in the context of heating and transportation.

Interviewees agree that digitalization has contributed to more efficient organizational work. The presence of many digital tools is not seen as something unique for the tourism industry, but something that characterizes most of the modern business sector. Key tools pointed out by the respondents include digital meeting tools, cloud solutions, accounting tools, sustainability management tools, and systems for payroll and human resource management. Some respondents from small firms call for joint data analytic resources to serve small tourism enterprises in exploiting big datasets. Among the larger tourism firms, some draw inspiration from the rail and aviation industries in their market analyses and price setting.

Digital marketing sharpens competition, enables instant changes in marketing campaigns and allows firms to communicate directly with their customers. It provides firms and destinations with new opportunities to reach potential customers and provides information on accessibility, availability, facilities, and opening hours. As many compete for the attention of the recipients of digital marketing campaigns, the advertising should hit a nerve. In the case of social media, a suitable medium for reaching the target groups should be chosen. However, the new opportunities also come at a cost, where small firms must choose some prioritized marketing channels. The new marketing channel is also easier to exploit for large firms and small niche firms than for small generic ones. Traditional physical marketing still attracts elderly tourists and people from less digitalized countries than Norway.

Many respondents call for more coordination, cooperation, interactivity, and integration in the digital presentation of local tourism products. Digital marketing is considered a tool to prolong stays and build traveling volume outside the peak season. Marketing cooperation and branding of complete destinations are highlighted as a necessity, especially for small companies, where Fjord Norway, the destination companies and larger companies are mentioned as coordinating players. Generally, there is much satisfaction with the marketing contributions of Fjord Norway and the destination companies but more skepticism towards what are perceived as less relevant efforts from Visit Norway and Innovation Norway.

Digitalization has also caused a decline in the number of national booking channels, while it has become crucial to show up in searches at relevant booking monitors. Digital booking solutions provide a platform for product customization and targeting. Online booking is crucial for accommodation and long-distance passenger transportation, but to an increasing extent, it is applied in other tourism services. Although many respondents appreciate the reach and the marketing opportunities provided by international online travel agencies, most are frustrated by the provisions and price rigidities that the agencies require. The respondents describe a trade-off between marketing catchment through the agencies and product control. Several interviewees call for extended cooperation on local booking solutions hosted by destination companies or other overreaching organizations in the industry. Lack of integration between different booking systems and between booking and payment systems occasionally causes problems, aggravated by a lack of digital competence in the smaller firms.

Technological infrastructure, such as electrical charging facilities and electronic communication infrastructure, are recognized as hygiene factors. Electrification of vehicles is considered necessary for the green transition. However, it also poses challenges in the form of few charging facilities in rural areas and vulnerability to harsh weather conditions. Several interviewees call for energy hubs and an adequately dimensioned power grid to handle the need for charging facilities for cars, buses, trucks, ferries, and ships. They argue that new charging facilities should be located near established facilities with a commercial service supply, like in local centers or transportation junction points. While some respondents are content with the county government's effort to roll out charging facilities, others call for more efforts.

Mobile and wired broadband coverage is mostly deemed satisfactory across Vestland, but a lack of connectivity may cause problems at the most rural locations and along train and ship routes. Such problems include the unavailability of online tourism apps, loss of social media attention, and absence of emergency communication. In this regard, some respondents call for more awareness about the public support scheme for broadband expansion measures operated by the counties with professional supervision from the Norwegian Communications Authority.

2. INTRODUCTION

2.1 Background and Motivation

The climate and nature crises pose imminent threats to the planet, impacting ecosystems, biodiversity, and weather patterns, necessitating urgent action to mitigate climate impacts and environmental degradation. Like other economic sectors, the tourism industry is undergoing a green transition. Understanding how tourism businesses adapt to the green transition is crucial, particularly in the Norwegian county of Vestland, where nature experiences are essential to the tourism experience.

The unique coastal, mountain and fjord nature of Western Norway is a delight both for the local population and the incoming tourists. Nature experiences contribute to economic welfare as a component of tourism's product offering and value creation. By facilitating tourists' nature experiences, the tourism industry creates income, jobs, and housing in the county of Vestland. However, the climate and nature crises are placing ever stricter demands on tourism's sustainability and green values. Tourism businesses and destinations face many challenges related to low productivity, free-rider problems and conflicts between business development and natural values. Innovative new technology can be a key to triggering value creation in tourism in response to the green transition.

Transport, accommodation, food and drink services, cultural experiences and other activities mediated by travel operators are complementary businesses brought together in the tourism industry through sales to travelling people. The companies are also complementary to nature. The opportunity to experience fjords, mountains, and cultural and coastal landscapes attracts tourists to Western Norway. Tourism is a substantial industry in Vestland county and generates significant activity within related industries such as construction and trade. The commitment of Western Norway's tourism industry to green competitiveness is illustrated in the project "Scenario Fjord Norway 2030", where "attractiveness through sustainability" was chosen as the shared vision among the many tourism businesses that participated in the Fjord Norway strategy process. However, the industry faces severe challenges in the face of the green transition. This project focuses on four central challenges in sustainable tourism during this period.

The first challenge is that tourism companies compete for tourists against countries with lower cost levels and compete for labor and investment against highly productive industries in Western Norway.

The tourism industry in Vestland county is organized in the regional destination company Fjord Norway, which also organizes the tourism industry in the rest of Western Norway (e.g., Rogaland, South of Vestland, and Møre og Romsdal, North of Vestland). In Vestland, Fjord Norway consists of seven destination companies: Visit Sunnhordland, Visit Hardanger, Visit Bergen, Visit Voss, Visit Sognefjord, Visit Fjordkysten and Sunnfjord, and Visit Nordfjord (see subappendix A.1 for how the municipalities are organized into destination companies). The regional destination companies cooperate with the national destination company, Visit Norway. In addition, the national development bank, Innovation Norway, supports the Norwegian tourism industry in marketing and analysis.

A second challenge is to overcome the inherent free-rider problem in safeguarding nature, developing and maintaining infrastructure for nature experiences, and coordinating products offered at the destination level (Jakobsen & Iversen, 2019). Sustainable destinations must facilitate tourism through infrastructure such as roads, paths, and signage, which requires measures and funding that each private company has too little incentive to pay for from a destination perspective.

A third challenge is the direct conflict between economic development and safeguarding nature, landscapes, and habitats. In several locations in Vestland county, energy projects and tourism products are being developed in natural areas, adding pressure on red-listed species and changing landscapes.

A fourth challenge is to enable the use of technologies and exploit opportunities in a time of rapid digital development. The internet constantly provides new opportunities to reach customers and plan journeys, while travel apps provide new opportunities to experience nature and culture at the destination.

The research objective of the project “The Tourism Industry in Vestland during the Green Transition” is to produce new knowledge about green competitiveness and the trade-off between development and nature in close cooperation between tourism businesses and the public sector.

2.2 Research Questions and Design

We investigate how the nature-based tourism industry should meet opportunities and challenges linked to the green transition and international competition. Our research questions are:

RQ.1 How can better utilization of the nature and cultural aspects of the tourism products assist tourism companies in increasing both cost and quality competitiveness in future international competition?

RQ.2 How can a better organization of the tourism industry at the destination contribute to solving inherent free-rider problems related to the use of nature?

RQ.3 What are the occurrences where there are conflicts between tourism and other types of development and nature in Vestland?

RQ.4 How does technology provide new opportunities and challenges for tourism during the green transition, including factors related to the product, the production process, the organization, and marketing?

The report examines how quality competitiveness, coordination, nature values and digitization at the company, destination and societal levels can push the industry in a green direction. We will contribute to identifying best practices and pitfalls in developing sustainable tourism through business activities and regulation, focusing on the quality aspect, coordination, and technology.

Interviews constitute our primary methodology and information source. Interviews are appropriate for the initial mapping of general topics, where the objective is to identify new details suited for further investigation. In consultation with the partners, we have developed a semi-structured interview guide on the green transition in Vestland tourism, including generic considerations and issues related to quality competition, tourism-related public goods, the balance between economic value creation and safeguarding nature's ecosystem services, and technology. The interview subjects are distributed across destination companies, firms providing accommodation, other tourism firms, business organizations, local authorities and nature conservation interests.

3. METHODS AND DATA

In this chapter, we account for data and methodology that we apply in our study of the tourism industry in Vestland during the green transition. Interviews constitute this project's primary methodology and most important data source. The interviews are supplemented by a document review, quantitative analysis, and input from the project's reference group.

3.1Reference Group

During the work with this project, we received feedback from a reference group. The purpose of the reference group was to provide advice on the information collection, including the interviews and, subsequently, interpretation of the results. In addition, we encouraged the reference group members to offer their thoughts about the status and needed measures for tourism firms and authorities.

Four reference group meetings were held, of which the third was physical, and the other was digital:

- **Initial meeting:** In the first reference group meeting, we oriented the reference group members about the project while they provided their initial input.
- **Input to the interviews:** In the second reference group meeting, we presented our tentative interview guidance and list and received comments from the reference group.
- **Meeting on interpretation of the interviews:** In the third reference group meeting, we presented and received feedback on the interview input.
- **Final meeting:** We reviewed and received feedback on the project's main findings in the fourth reference group meeting.

In addition to the reference group meetings, we have had a running dialogue with the reference group during the project, allowing them to comment upon our written work. In case of the absence of a reference group member from a reference group meeting, we followed them up in separate meetings.

The reference group was composed with the intention of involving a broad spectrum of key organizations with a solid understanding of the topic. The group comprised seven informants working in five organizations to obtain a broad perspective on the research topics. These informants are listed in Table 1.

Table 1: List of the informants in the reference group with type of informant, organization, and title. Color codes indicate the main groups of informants – destination and business associations, tourism firms, and public and nature conservation interests.

Type of informant	Organization	Title	Interviewee
Regional destination company	Fjord Norway	Managing director	Marianne Johnsen and Stein Ove Rolland
Business association	The Confederation of Norwegian Enterprise (NHO) Vestlandet	Senior advisor	Wenche Salthella
Tour operator	Up Norway	Managing director	Torunn Tronsvang
County authorities	Vestland County	Advisor and senior advisor within tourism	Anne Silje Sylvarnes and Marta Rongved
National park	Norwegian Nature Centre in Hardanger	Managing director	Oddvar Brakestad

3.2Interviews

In consultation with the reference group, we chose interview subjects with partially different perspectives, collectively providing a comprehensive understanding of the topic. We conducted 20 interviews with 22 key informants in the tourism industry, including seven interviews with destination leaders, ten with tourism businesses, three from firms providing tourism experiences, and three from organizations working with nature conservation interests. These informants are listed in Table 2.

The interviews are carried out in a semi-structured fashion, where we, to some extent, allow the interviewees to emphasise topics of which they have superior knowledge. Note that our interviewees were people in senior roles. Thus, the interviews could be considered elite interviews, implying that preparation and extensive prior knowledge were critical to facilitating a constructive interview climate, as suggested by Darbi & Hall (2014).

Topically, the interviews cover the four subtopics of our investigation – competitiveness, common good challenges, trade-offs between industry interests and environmental concerns, and adaptation to technological development. For each subtopic, we ask about four question points reported in our interview guide, which is rendered in appendix B.

In our analysis of the interview data, we apply the general inductive approach in analyzing data, as proposed by Thomas (2006). Our interview responses are systematized in accordance with thethematic categorization, rendered in appendix C. This enables us to transform the condensed raw textual and recorded data into a structured presentation of reliable and valid results. Furthermore, the approach is suited to identifying underlying patterns and providing clear links between the research objectives and summary findings in the raw data.

Table 2: List of the informants in the interviews with type of informant, organization, and title. Color codes indicate the main groups of informants – destination and business associations, tourism firms and public and nature conservation interests.

Type of informant	Organization	Title	Interviewee
City destination	Visit Bergen	Managing director	Anders Nyland
Coastal destination	Visit Fjordkysten og Sunnfjord	Managing director	Marita Solheim
Coastal destination	Visit Sunnhordland	Managing director	Hilde Eide Helland
Fjord destination	Visit Hardangerfjord	Managing director	Andreas Skogseth
Fjord destination	Visit Nordfjord	Managing director	Marita Lindvik
Fjord destination	Visit Sognefjord	Managing director	Heidi Hauge
Highland destination	Visit Voss	Managing director	Gry Bystøl
Horizontal integrated hotel chain	Norway's Best	Manager for strategy and communication	Are Tokvam
Accommodation with food services	Fjærland Fjordstove Hotell	Managing director and consultant	Bård Huseby
Accommodation with food services	Haaheim Gaard	Managing director	Torstein Hatlevik
Accommodation with food services	Jølstraholmen	Managing director	Kristine Hjelmbrekke and Tore Karlsen
Accommodation with food services	Kviknes Hotel	Managing director	Sigurd Kvikne
Cruise	The Fjords	Managing director	John Vonli
Restaurant and activities	Buer restaurant	Owner	Elisabeth Wesenlund Hauge
Accommodation, restaurant, and activities	Voss Active	Managing director	Frode Solbakk
Accommodation with food services	Solstrand Hotel & Bad	Hotel owner Technical director	Børrea Schau-Larsen and Terje Klyve
Tourism management	Trolltunga AS	Managing director	Åse Marie Evjen
Tour organization	Bergen og Hordaland Turlag	Managing director	Helene Ødven
Environment certification	Ctma Wenche Nygård Eeg	Managing director	Wenche Nygård Eeg
Nature management	County Governor of Vestland	Senior adviser	Tor Arne Hauge

4. COMPETITIVENESS OF THE TOURISM INDUSTRY

4.1 Background

Tourism in Norway is affected by the relatively high-cost level in Norway compared to abroad (Iversen et al., 2015; Aalen et al., 2018). The high-cost input factors in Norway imply that tourism companies should focus on high quality to increase their competitiveness.

In their evaluation of Fjord Norway, Blumenthal et al. (2023) investigate the competitiveness of the tourism industry in Western Norway. Based on the background data from this study, which builds on data from Statistics Norway, we will now briefly dive into the figures for Vestland county only. An overview of the industry classification applied is provided in subappendix A.2.

Like the rest of Norway, Vestland steadily increased value-added, employment and labor productivity within accommodation and food and drinks services for more than a decade before activity dropped during the pandemic. Vestland's value-added share in these segments in the European Economic Area largely follows the strength of the Norwegian krone, within a range of 0.11 per cent to 0.16 per cent in the last 15 years. Again, an exception occurred during the coronavirus pandemic, when the county captured value-added share despite a currency drop. Due to a public support scheme offered in the period, there were relatively few bankruptcies in the industry during the pandemic.

The background figures from Statistics Norway show that 54.4 per cent of tourists in 2022 visited between June and August, while 71.8 per cent visited between May and September. Foreign tourists dominated the summer season and constituted 54.4 per cent of the tourism for the whole year. On the other hand, business tourism was important off-season and represented 37.2 per cent of tourism for the year.

In 2022, the employment distribution in the tourism industry in Vestland was as follows: 37.5 per cent in food and drink services, 31.3 per cent in passenger transportation, 19.9 per cent in accommodation services, 8.9 per cent in active and cultural experience services, 1.9 per cent in travel agencies and 0.4 per cent in tourist trade. Note that locals also purchase services from the tourism industry (e.g., food and drink services, passenger transportation, active and cultural experience services, and tourism trade), while tourists purchase services from other industries (e.g., conventional retail trade and personal services).

The Bergen region dominates the tourism industry in Vestland, representing about 70 per cent of the regional tourism employment, both including and excluding passenger transportation. Accommodation stands for a relatively large share of employment in the industry at popular rural destinations, while food and drink services stand for a relatively low share. During the last 15 years, there has been a tendency of relatively strong employment growth at destinations that already had many visitors compared to other destinations.

In this chapter, we aim to investigate how a better utilization of the nature and cultural aspects of the tourism product assists tourism companies in increasing their ability to face future international competition, both in terms of cost competition and quality competition. We ask: "What groups of tourists are and should be targeted by the tourism industry in Vestland across destinations and seasons?", "How are aspects of nature and culture utilized in regional tourism products and marketing, and how should they be utilized?", "How may local firms attract crucial factor inputs and ensure a competitive factor return?", and "How does contextual factors influence the regional tourism industry, and how should the industry adapt to these circumstances?".

4.2 Status Consideration of the Informants

4.2.1 Type of Travelers

All destination companies highlight the domestic Norwegian market as one of the most important markets, although with varying importance. The share of Norwegians among visitors is higher in mountain destinations and otherwise rural destinations with relatively fewer tourists. At the most visited destinations in the central areas of Vestland (particularly the Bergen region), foreigners constitute a relatively large share of the tourists. The Nordic and Western European markets are the largest foreign segments, followed by the Southern European and American markets. The interviewees mention Germany, the Netherlands and Sweden most frequently as their most important markets. Some also mention Asian Arab countries and Eastern Asia, but these markets have declined after the coronavirus pandemic.

The largest tourism businesses and destinations conduct more targeted and extensive marketing in foreign markets. According to several respondents, firms in other tourism segments than accommodation are relatively dependent on word-of-mouth marketing, especially when attracting domestic tourists and locals. Some informants say large tourist firms locally rely on long-term international cooperation in their marketing. Other interviewees perceive word of mouth as a sufficient marketing strategy for mature destinations with capacity limits, so they direct most of their marketing attention toward more immature tourism destinations.

Respondents explain their choice of target countries with factors like accessibility, financial constraints, priorities of collaborative organizations at the national level, and climatic footprint. Moreover, the respondents believe that more focus on sustainability has contributed to more regional European and less overseas tourism. The corona pandemic has further enhanced this trend. Some of the informants claim to target environmentally focused customers and customers with a passion for nature experiences and an interest in sustainability. Many of them see global regionalization and focus on nearby markets as an expedient and sustainable way of approaching the green transition. Destinations and firms that receive a relatively large number of visitors tend to have a more global perspective and be less concerned about the climate emissions associated with long-distance travel. Some respondents state that they do not make any explicit efforts to attract tourists from overseas markets. However, these interviewees represent destinations with little international traffic.

Some destination companies have, in recent years, redirected their marketing focus towards specific tourist types, regardless of their country of origin, in line with Innovation Norway's new strategy. Some destinations build their marketing strategy on Visit Norway's topologies of tourists. Moreover, interest in nature is listed as a main attribute among most tourists coming to visit the county. One destination focuses on visitors above 40 years of age, as these tend to have a relatively high willingness and ability to pay. Other destination organizations aim to attract tourists who like to spend time outdoors as a common characteristic, where independent travelers are prioritized over those in groups. As crowding and capacity may constitute challenges at some destinations, attracting well-paying guests who spend money on local services is important. Moreover, destinations mainly target tourists with a high willingness to pay and have only to a limited extent tried to attract large volumes of tourists with low willingness to pay during the last ten years.

Other respondents also point out adventurous and active tourists as specific target groups, in addition to cultivated, mindful and family tourists. During the summer, nature-based activities and adventure segments, such as hiking, cycling and parachuting, play an important role. For winter destinations, alpine and cross-country skiing segments are crucial. Other tourists seek rest, silence, and untouched nature. These pursue key tourist attractions, including fjords, mountains, World Heritage areas and other top sites. In addition, many suppliers of nature experiences target the market for Meetings, incentives, conferences, and exhibitions (MICE).

Another target group that is pinpointed is individual vacationing tourists with high ability to pay and an engagement in sustainability.

With the exception of mountain destinations, the main tourist season in Vestland extends from approximately April/May to September/October, with more visited destinations having somewhat longer seasons than less visited destinations. In coastal areas, sport fishing contributes to a slightly longer main season, lasting from March to October. Uneven tourism traffic with peak season during summertime (and wintertime for some destinations) constitutes a considerable challenge for many destinations. Year-round tourism is considered essential from a sustainability perspective. Respondents also point out that short tourist stays cause an additional administrative burden per overnight stay compared to extended stays.

At destinations offering both summer and winter products, tourist businesses occasionally work together to create a whole-year destination. While capacity constraints typically are an issue in the high season, low visitor numbers may force firms to close in the low season. Consequently, while the objective during the main season is to maximize income, the objective during the low season is to utilize unused capacity. Most respondents say that they have succeeded in prolonging the season to some extent. Seasonal closures among partners are a considerable challenge for firms working on season extension. Some informants mention the pandemic as a drawback for their efforts to prolong the season. However, they report that they are now approaching old success levels.

Business travelers pay relatively well and contribute to higher traffic in the off-season. Moreover, business travelers help to even out the visitor flow over the week, particularly during the spring and the fall. Business tourism is vital for city destinations and destinations where tourism constitutes a relatively low share of the economy. Business tourists also constitute a relatively important customer group in rural destinations other than relatively popular destinations during the winter season. Much of the business travel is related to meetings in local business activities and thus outside the control of the tourism firms, but the courses and conferences are partly influenceable.

Most business tourists are Norwegian, but there are also many business travelers from other European countries. Foreign tourists from different markets traveling in connection with holidays or internal business seminars are attracted by Vestland’s nature, even when their destination conducts limited marketing efforts towards these foreign markets. Some destinations target the business-to-business market broadly, while they are more focused in their marketing campaigns towards the business-to-business market.

4.2.2 Attributes of the Tourism Product

Nature experiences are highlighted by all respondents as the essential attribute of Vestland, both in commercials and for the tourism products offered at the destinations. Experiences of nature and activities in nature constitute the main crowd puller drawing attention to Vestland as a tourism region. There may be crowding challenges at some particularly famous sites, but some of our respondents still point out that the problem is less pronounced compared to many similar destinations in Europe.

Sustainability, environmental awareness and a focus on nature constitute key trends enhancing nature-based tourism in Norway. Several informants express that nature-based experiences are gaining a more robust position in the market. They believe that climate change will increase demand for clean air and unique nature experiences. In this context, they predict that warm and summers with little local air pollution and cold and stable winters may benefit Vestland compared to other destinations in Europe, as well as and more focus on pure and clean nature experiences. In this regard, one of our respondents points out that challenges related to climate change in central Europe (e.g., very hot temperature and drought in some areas) may make their tourism products relatively more attractive for tourists from Continental Europe.

The nature product in Vestlandet is supplemented with culture products to provide a more complete tourism offer and make tourists spend money locally. Specifically, local food and drinks are highlighted by many respondents as an essential cultural attribute. Other examples are art, cultural events, local farm experiences, local artisans' services, microbrewery experiences, and trips to local cultural sights. Respondents from Bergen tend to focus more on the cultural aspects than those from rural destinations. These respondents also claim to be less devoted to the gateway role than before and want to be a place where tourists stay longer. Although cultural products are put forward as an important part of Vestland's supply of tourism products by a vast majority of the interviewees, many of them also recognize challenges with market basis to establishing firm promoting culture heritage in local communities.

4.2.3 Access to Factor Inputs in Production

The tourism industry faces multiple recruitment challenges. By many actors, it is perceived as tough to create an attractive tourism product, at the same time as the highly skilled labor market is tight with significant local recruitment challenges. While the other private industries pay high wages, the public sector offer good working conditions in terms of working hours and pension schemes. Many respondents, particularly the ones representing small firms directly or indirectly, tell various versions of the following story: Low wages and low status are perceived as challenges to recruitment. People are reluctant to invest and fully engage in their businesses, as they lack obvious heirs to take over their firms' operations, when they retire. Moreover, the Norwegian tourism industry is dominated by hard-working tourism enthusiasts. In small firms, a wide range of tasks is spread across only a few people, who are often forced to prioritize short-term duties instead of long-term strategic measures.

Many respondents are frustrated by what they perceive as the low status of the tourism industry relative to other industries. One informant tells that maritime tourism firms recruit in the maritime labor market rather than the tourism labor market. Another informant underlines that parts of the tourism industry are kept alive by volunteers and dependent on the contributions of unpaid enthusiasts. The person concerned is also bothered by Innovation Norway's alleged lack of recognition for voluntary part of the tourism industry. Some tourist firms get help from dedicated volunteers and part-time employees, but only up to a certain point. Another respondent states that voluntary-based tourism providers often depend on donations.

Recruiting labor is particularly challenging in rural areas. First, this relates to limited local labor markets, hampering the optimal matching of firms and employees. Second, relatively low labor market and residential attractiveness make recruitment even harder. Moreover, municipalities are struggling to provide enough school places and childcare for children, as well as personal services, infrastructure services and social meeting arenas.

Lack of in-house competence and recurring costs and training processes due to high turnover constitute a major concern for many firms. Skilled personnel are hard to get hold of, including chefs, ICT specialists and professional drivers, as well as specialists within business administration, business analytics, and tourism subjects. When the capacity limit is reached in the summertime, not only are guest rooms fully booked, but it also becomes difficult to find accommodation for workers.

Several respondents report considerable profitability challenges in large parts of the tourism industry, which are visible in the business statistics and affect the willingness to invest in and provide loans to the industry. Most respondents consider Norwegian cost levels challenging, implying that product quality becomes a critical competition factor. One exception to this is a respondent from Bergen, who sees the local cost level as comparable to the cost level in Western metropolitan areas.

Respondents express that challenges related to cost pressure and funding vary considerably between destinations and firms. Moreover, it is difficult to attract capital for small and medium-sized entities, which, according to the respondents, is due to both profitability and knowledge asymmetries regarding the local business potential. Although some firms manage to attract regional equity, most firms seek national equity as well. The pandemic has allegedly worsened the difficulties in attracting capital from creditors and investors.

Other interviewees highlight consolidation as another important development pattern across industry segments. Some respondents claim that this trend challenges the profitability of small tourism firms without any distinct niche, whereas other consider it as the solution to the problem.

Some smaller firms report that due to investment barriers, they are not seeking to raise external capital but instead try to reinvest their earnings at a slower and less than optimal investment speed. In contrast to the realities described by small firms, one representative of a large firm describes a better investment climate in the tourism industry now than earlier. The informant in question describes local investors and surpluses as important sources for funding of reinvestments. Other respondents are frustrated by what they perceive as overly bureaucratic public proceedings and relatively little public faith in the tourism industry, which they claim hampers the investment climate in the industry.

4.2.4 Importance of Contextual Circumstances

The respondents highlight many different contextual circumstances as vital for the tourism industry in Vestland. This includes macro developments in the society, the international economy, the regulatory environment, external marketing, trends, infrastructure, and transportation. The pandemic and high energy prices in the wake of the war in Ukraine have contributed to a greater ability to adjust and adapt. Many firms have searched for new market possibilities and adjusted their daily operations. Supposedly, the more flexible and efficient firms have come strengthened out of the pandemic, relatively speaking, although public support schemes contributed to fewer bankruptcies than usual. Respondents acknowledge that shocks may change the business environment fundamentally overnight.

Businesses pay attention to developments in the international economy, but few adjust their course significantly. Some businesses are very aware of how the exchange rate affects incoming tourism, while others follow the development in the exchange rate less closely. Small firms consider surveillance of the world economy and exchange rate as resource-demanding and complicated, while some of the largest firms follow these developments more closely. Most respondents consider the exchange rate something they cannot do much about and therefore have less focus on, while a few states that they are very responsive. Some informants from rural areas say they experience escalating challenges with profitability, recruitment, and persistently high wage growth due to the current economic cycle, with low unemployment and a historically weak currency.

Generally, the respondents are concerned by the regulatory environment and public support measures targeted towards the tourism industry. Many respondents are concerned with predictability and whether the local municipalities have sufficient funding to solve the associated challenges. One respondent believes that labor regulations will become even stricter, strengthening the rights of temporary summer employees and limiting the potential exploitation of foreigners and youth. Most respondents are satisfied with Fjord Norway's tourism promotion in Western Norway. To the contrary, several respondents from tourist businesses express dissatisfaction with the work of Innovation Norway and Visit Norway, although some acknowledge their work. The tourism industry perceives that they have too little influence on the priorities of Innovation Norway and Visit Norway, while the analyses they offer are regarded as low quality.

One representative for nature conservation interests points out that increasingly stricter environmental and certification requirements are being introduced by the European Union for the European Economic Area, including Norway. Norwegian authorities have introduced stricter certification requirements connection with public tenders and the hosting of events and courses. Another respondent claims that there are increasingly more regulations on environmental issues (e.g., in the transportation and construction industries), without sufficient adaptions to the tourism industry's needs. Yet another interviewee praises the Norwegian government enterprise Enova for supporting environmentally friendly production and consumption of energy, thereby contributing to economic and environmental sustainability.

Many respondents stress that online marketing has increased competition. Tour operators struggled substantially during the pandemic and had already been challenged by digitalization, but they recovered somewhat after the pandemic. One informant perceives that tourism marketing has been professionalized in recent years, making it harder for small businesses to compete. Some respondents also mention developments related to digitalization and the sharing economy. One informant from a firm offering accommodation highlights the demand for order flexibility and cancellation options in case of bad weather as a considerable challenge.

Another group of respondents believe that due to climate change, Norway will become a more important tourist destination in the future. They believe that Norway will become a green destination with a decent year-round climate. In contrast, European destinations will struggle with hot summers and a lack of snow in the winters. Some informants point out that holiday tourists have become more aware of environmental and sustainability concerns. However, several informants highlighting this green consumer perspective also stress that the influence of these factors on actual tourist behavior should not be exaggerated. Other respondents highlight regionalization in tourism as a partial replacement for globalization due to increasing concerns about the climate footprint associated with long-distance travel.

Many respondents highlight regional and national aviation as a critical means of attracting foreign tourists. Moreover, access to international aviation routes is considered crucial for tourism. Several respondents do not pay much attention to long-distance transportation, considering it outside their sphere of influence. Nevertheless, restrictions in the availability of aviation routes and public transportation outside the main seasons complicate attempts to prolong the main tourist seasons and build shoulder seasons.

Although this is not considered a significant issue in Bergen, informants in more rural areas of the county perceive accessibility as a considerable competitive disadvantage. Respondents from remote destinations mention car dependency and a public transportation schedule that largely follows the school year and lacks coordination across the county borders. Many are calling for better and more seamless public transportation solutions. Last-mile transportation is often challenging for tourism firms, particularly in rural areas and for small firms that cannot provide customized solutions for their customers. Several informants in rural areas are frustrated about challenges in offering transportation for their guests. As certification and comprehensive insurance cover is needed to operate tour buses, local taxis often remain the only transport option in areas with limited public transportation.

At relatively popular tourist destinations in the fjords, limited ferry capacity may result in logistical problems and cause annoyance in the peak season at the expense of both tourists and locals. Some respondents from coastal destinations try to contribute to more and more regular ferry routes to increase their destinations' accessibility.

4.3 Advice from the Informants

4.3.1 Type of Travelers

The respondents advocate for quite different marketing approaches. One respondent claims that most firms overinvest in marketing and instead trust word of mouth. Another respondent claims that product and service quality must be improved before environmental sustainability can be prioritized. Yet another respondent describes it as a huge pitfall when authentic and successful firms change their concept to something they believe other people ask for.

One respondent devoted to sustainability concerns underlines a need for a heterogenous firm flora and that not all businesses can be deeply devoted to sustainability. The person in question is also critical towards half-hearted attempts on sustainability, often driven by a desire to appear as sustainable in front of customers, suppliers and business partners. Some firms consistently use local and environmentally friendly suppliers because they want to contribute to a sustainable local economy. Others limit themselves to small and symbolic purchases, which they still can label as contribution to local sustainability in their marketing and sales purposes.

Destination Bergen aims to become more than a transport hub and an entrance port to the county by promoting local attractions. The destination intends to offer excursions to a variety of sites nearby, which in some cases need to be built up or strengthened. Some destinations cooperate with other destinations along the coast to become natural stops along tourists' routes. Some also see the importance of cooperation with complementary destinations in other parts of the country, particularly the Oslo region as a gateway to Norway, as well as Northern Norway, another region that offers spectacular nature experiences. One respondent highlights what he/she sees as a successful cooperation between Northern Norway and Fjord Norway on overseas winter tourism before the pandemic.

Our informants generally focus their advice on attracting tourists with a high willingness to pay for high-quality tourism products. Some respondents also point out that the market strategies must differ to obtain a variety in the product spectrum. Other informants at relatively popular tourist destinations believe there is an income potential in targeting groups of tourists, not only individuals Other respondents highlight retired people as an attractive tourist segment with the opportunity to travel outside the peak season. Another informant recommends that destinations focus on tourists interested in active or passive nature experiences and family tourists.

Some respondents at other destinations seek to attract regional tourists concerned about environmental and sustainability issues, both in the leisure and business segments. Nature managers stress that natural sustainability, from their point of view, should be enhanced by focusing on regional rather than overseas tourism, and high-end tourism rather than mass tourism.

While attracting tourists with a high willingness to pay constitutes a focus during the peak season, improved capacity utilization receives most attention in the off-season due to its importance for profitability and creating year-round employment. The destination companies propose several measures for season extension, particularly between October and April. It is pointed out that the destinations may offer unique natural experiences during all seasons that could be highlighted in advertising.

Some respondents advocate attention towards other markets' off-season as an important measure for season extension. In this context, overseas tourists with a high ability to pay are often a focus at relatively popular destinations. However, the relevant respondents also highlight a focus on sustainability and extending of the tourists' stay. Some interviewees find it challenging to keep their business open all year round. One of these informants states that all-year operations also constitute a measure for increasing quality and prices, making jobs attractive and increasing professionalism. A respondent for a firm providing tourism experiences considers comfort and environmental awareness important features of quality competition.

Supply and marketing of active experiences in nature the whole year round are considered season-prolonging measures. Respondents from destinations aiming to become year-round destinations tell about complementary cooperation between summer and winter destinations in their area. For them, this type of cooperation constitutes a season-prolonging measure with the possibility of staff-sharing and steady income throughout the year. Informants in Bergen also call for more marketing towards the business and university sectors, as well as the families of these business travelers.

Cultural and business events are highlighted as possible season-extending measures. Good meeting facilities and easy accessibility are critical success criteria for attracting business travelers. Activity events, cultural events and conferences are highlighted by many as appropriate season-extending measures. An accommodation firm host focuses on courses during the off-season. Another respondent seeks to attract events for locals and other

Norwegians, such business events, events for the university sector and social events (provided that a serious image is maintained).

4.3.2 Attributes of the Tourism Product

Nature constitutes the key attribute that the tourism industry in Vestland seeks to build its business on in various ways. Some firms exploit their proximity to natural attractions to attract tourists, both as a stopover and as a supplier of active experiences in proximity to the attraction. One informant tries to sell active experiences in an environment where nature enhances the quality of the experience. Another respondent at a relatively popular destination says they try to spread the tourists out to neighboring destinations in the high season when their capacity is maxed out.

Several informants across the different informant groups stress the importance of using visualization and nature experiences in commercials and tourism products. Some respondents argue that more features of the unique nature of Vestland could be exploited to create year-round products. While the marketing efforts in Vestland are generally perceived as good at highlighting unique nature, they see the potential for showcasing unique activities and sites across each season.

Both commercial and non-commercial respondents underline the value of preserving the nature they present to tourists. One respondent has contributed to a joint local sustainability initiative of local firms. Another respondent seeks to provide pure nature experiences without noise, vibration, visual intrusions, and air pollution. Other respondents call for marketing of the environmental sustainability of the tourism products of Vestland. However, there is also awareness about the substantial climate footprint associated with foreign travelers.

Although nature experiences are considered critical for attracting people to Norway, many respondents point out challenges associated with getting tourists in nature to spend money locally. Most informants highlight the importance of creating a complete tourism product in their region to get tourists to spend more locally per day and to encourage longer stays. Hence, most supply supplementary activities and cultural products to go with the nature experience. Respondents frequently mention cultural experiences, food and drink, and active experience services. Respondents argue that local tourism firms may be able to sell local cultural experiences of high quality at a high price.

Several informants underline the importance of encouraging a culture-based tourism supply through cooperation between firms and public facilitation, which in turn may contribute to a broader service offer for locals and more attractive regions. Some respondents exploit the cultural attributes of old and traditional buildings and farms to enhance the culture experiences of their visitors. Another interviewee from Bergen put particular emphasis on culture experiences in this regard. The person in question inter alia points out museums and cultural buildings as important means to enhance the tourist experience and prolong visitors' stays.

Many respondents emphasize cooperation in the industry to create attractive and holistic tourism products, which include both nature and cultural experiences. They aim to create products that both help to enhance and are enhanced by the unique nature and culture in the surroundings. One informant highlights the importance of cooperation with local landowners when offering nature-based experiences services on their lots of land. Another respondent from a World Heritage area argues that this status involves an ethical obligation to safeguard and facilitate the local market potential for small scale production. The respective informant labels such activities as a sort of corporate social responsibility and showcase for local culture.

4.3.3 Access to Factor Inputs in Production

Most respondents discuss recruitment challenges and scarcity in the labor market. This topic arouses much interest, and respondents suggest several recruitment strategies.

As the tourism industry is not wage-leading, respondents propose several measures to enhance recruitment, decrease turnover and increase job attractiveness. Varied labor tasks are mentioned as success factors for job attractiveness. Many respondents point out the nature experiences and perks for the employees as important attributes in recruiting personnel. Some respondents also argue that the tourism industry's contribution to the local service offer should be highlighted when marketing the industry in local communities.

Other respondents strive to achieve a sense of belonging within their firm, which motivates workers and makes them more inclined to undertake shift work. One firm attempts to create a fun young work environment where the employees can live together. The workers receive work benefits related to tourism activities while the firm tries to negotiate employee benefits with collaborating partners. Another respondent highlights stability and predictability as key work conditions for low turnover, reasonable payment, and varying work content.

Some firms benefit from a good reputation as a specialized employer. Personal contacts and professional networks constitute important recruitment avenues for many respondents, especially in the case of specialized workers and in rural areas. Other firms have recruitment through their networks as their primary recruitment strategy for low- and high-skilled workers.

For instance, respondents use foreign workers to employ more foreign workers and skilled workers to recruit other skilled workers with similar competence. A respondent claims that recruiting people to work with natural experiences is more straightforward than recruiting for roles in more traditional accommodation services and food and drink services. Along the same lines, another interviewee mentions work in beautiful natural surroundings and with a cool image as attractive job features that may prove helpful in recruitment. Other informants again highlight exciting future business prospects as important for recruitment. Moreover, the involvement of employees in decisions regarding day-to-day operations and potentially also strategic work is put forward as a way of motivating employees and reducing turnover.

Season extension is emphasized as being essential to increasing job attractiveness. Adapted and reasonable work schedules and rotation schemes are also highlighted as necessary for preventing high turnover. For firms operating at different destinations across the seasons, the ability to offer more varied work assignments may also be a positive attribute when it comes to attracting employees. Several respondents highlight that offering varied year-round work with the possibility for co-determination and potentially also product discounts are critical to creating attractive year-round workplaces. To solve the difficulty of providing housing for seasonal workers, some live in cars or temporary buildings. One respondent claims that sufficient accommodation for seasonal guest workers in the high seasons should be a municipal responsibility.

Several respondents highlight skilled personnel as a possible contributor towards attracting quality-oriented customers with a high willingness and ability to pay and prolong the tourism season. Low profits and seasonal irregularities make it difficult to offer attractive wage levels and working conditions to highly skilled workers. It also makes it more challenging to attract students to educational programs in the tourism sector. Other respondents from food and drink services highlight the importance of high-end chefs in building a brand and reputation. Recruitment of highly skilled professionals may contribute to higher service quality and season extension for some firms, but it is also expensive. Some respondents claim that municipalities are co-responsible for the attractiveness of the local labor market and living area, through their provision of public infrastructure and services such as schools and childcare for the families of employees.

Some respondents want to contribute to the local economy and therefore aim to use local suppliers when expedient. Other respondents tell about dedicated volunteers that contributing to enhancing the quality of the tourists' experiences (e.g., by offering free guiding or taking tourists out fishing).

Sharing skilled workers across firms is, as mentioned earlier, a possible way of securing necessary competence. Some respondents call for a common resource pool to assist firms that struggle to handle a wide range of tasks. They argue that sharing specialized key personnel between businesses through formal integration or collaboration can make it easier to retain these workers. Such assistance would also make it easier for key personnel to find time and energy to prioritize strategic measures which could deliver considerable positive impact in the long run.

Promotion and product quality improvement are commonly stressed as key measures to increase profitability. Conveying and realizing unique nature experiences is highlighted as the recipe for creating profitability by competing on quality. Some respondents at relatively popular destinations recommend that firms would profit from being more inclined increase their prices in the peak season. Other firms aim to develop new products to improve profitability.

While some firms emphasize consolidation as one way to solve challenges in small firms, others are worried that consolidation may lead to losing the uniqueness in their product and local attachment with devoted hosts. One interviewee is worried that large chain companies are taking big market shares, as they purchase small, struggling firms. Other respondents underline the value of comprehensive historical knowledge and experience in generational firms, including the knowledge transfers from previous generations.

One respondent for a firm providing tourism experiences undertakes extensive investments into technology to ensure future profitability. The respondent underlines the importance of showing convincing investment projects to obtain funding from creditors and investors. One representative for natural interests believes that a green focus in marketing and product development for firms near nature attractions may attract capital investments and enhance profitability. Other respondents discuss property renovation and investments into real estate to increase product quality.

4.3.4 Importance of Contextual Circumstances

While some respondents disregard contextual factors as something they cannot influence, others believe they benefit from being actively responding to changes in the circumstances. Some respondents believe increased responsiveness will be more critical going forward than historically due to the fact that the number and frequency of societal crises is increasing. Another respondent points out that responsiveness and adaptability to change are important but should not come at the expense of an authentic product and self-preservation. Yet another informant highlights offering a comprehensive product specter across the tourism industry and offering specialized products as future winning strategies in a tourism industry characterized by consolidation. The same respondents predict challenging times for other small tourism firms.

Although most informants do not follow international business cycles and currency fluctuations very closely, there are some exceptions. Two respondents representing a relatively popular destination and a large tourism firm mention hedging between different international markets depending on the economic situation and exchange rates in different countries to limit cyclical challenges and optimize their operations. One of these respondents describes a hedging strategy where they invest in marketing at several different markets to manage cyclical differences at least partially. Another respondent believes that tourism companies aimed at international tourists will probably need to become more responsive to changes in the exchange rate.

Several respondents mention the importance of a predictable regulatory environment with less onerous reporting requirements. They point out that the public authorities should contribute to a stable and predictable regulatory environment with a clear and well-announced plan for the near future concerning public investments and regulations.

Some interviewees want public support for marketing and competence development. Another group of informants states that the Fjord Norway cooperation has given Western Norway a competitive advantage. One respondent describes the combination of Visit Norway’s emphasis on sustainability and simultaneous marketing investments in overseas markets as a paradox. Another respondent claims that the complex ecosystem of destination companies and regional tourism companies leads to an unclear market strategy at the national level. According to the respondent, the strategy suffers from too many compromises and a lack of focus on the most considerable potential for ripple effects.

Many are critical of the role of Innovation Norway, even though the destination companies at the most popular sites tend to be more positive and highlight its contributions. Critics express that Innovation Norway neither helps firms to become profitable nor sustainable, which they blame on the lack of profit incentives and clear management instructions on sustainability. These respondents further indicate that Innovation Norway neither possesses the necessary topical knowledge about the tourism industry nor the necessary competence to produce valuable analyses. Some small firms instead carry out their own guest surveys to obtain more relevant information on their operating markets. Several respondents believe that national and destination-specific marketing and associated tourism analyses should, to a greater extent, be built from the bottom up and consider local needs.

Some respondents problematize that their customers must deal with several different transportation apps when traveling in Norway due to separate apps for each county-specific public transportation company. In addition, they need to deal with other transportation companies within aviation, ferries, taxis and railways. Some respondents call for integrated transportation routes with several options to enhance the quality of last-mile transportation. Many respondents put forward better coordination of transportation routes and tickets across county borders as an important measure to improve local connectivity.

Interviews at rural destinations reveal that respondents are frustrated about what they perceive as a public transportation offer that is too little adapted to the needs in remote tourist areas. In particular, adapted routes, smaller buses and the possibility of taking higher prices are considered valuable adjustments. One interviewee wants the regional or national government to pay for transportation experiments and more extensive public transportation routes. Another informant stresses that big tourist destinations typically will be able to fill up frequent buses to tourist sites and take considerably higher ticket prices than buses serving public transportation.

Some interviews suggest that cooperation between firms on the transportation supply in the local tourism industry will be advantageous, especially for small firms in rural areas that suffer from underdevelopment of transportation supply locally and cannot solve these challenges alone. Moreover, respondents at rural destinations describe the main transportation routes as insufficient for optimizing tourist traffic, both in terms of buses and ferry connections. A respondent from a relatively urban destination calls for a broader transportation supply.

4.4 Concluding Remarks and Future Directions

Destinations aim to target tourists with high willingness and ability to pay through high quality and a broad product spectrum. Tourists from Norway and the rest of the Nordics and Western Europe constitute key markets for all tourist destinations in Vestland county, but relatively popular destinations are generally more diversified across markets. Tourists seeking to experience nature actively or passively and family tourists are crucial. As tourism primarily takes place individually, some respondents see the potential for more group tourism.

For destinations other than the mountains, the main tourist season is during the summer from approximately April/May to September/October. While capacity is typically constrained in the peak season, an insufficient number of visitors may force firms to close in the off-season. In addition, firms aim to prolong tourists' stays by promoting local service supply and sites. Business tourism and measures supporting season extension are crucial for facilitating year-round tourism and associated professionalization in the industry. Measures proposed by the informants to increase tourism in the off-season include cultural and business events, marketing of all seasons and targeting wealthy retired tourists.

Nature experiences constitute the most important attribute of Vestland as a tourist region, attracting tourists to the region and for the tourism products offered at the destinations. To build a complete tourism supply and local tourism spending, our informants propose supplementing nature products with cultural products such as local food and drinks, cultural attractions, and events.

The interest in Western Norwegian nature has been enhanced by changes in the climate, as well as increased attention towards environmental and sustainability concerns. Some respondents call for environmental sustainability marketing when promoting tourism products, but many are aware of the substantial climate footprint of foreign tourists. An increased focus on sustainability and environmental concerns also influences regulations and customer preferences. To some extent, sustainability measures at the firm level are considered a necessity. However, it is pointed out that not all firms can be in this niche and that not all commitments to sustainability appear genuine. Besides, some respondents believe that consumers' environmental concerns are often exaggerated in marketing analysis and investigation reports, and some sustainability reporting is overly bureaucratic.

Many tourism firms struggle to recruit competent personnel, competing on working conditions with the public sector and on wage levels with other parts of the private sector. The challenges are particularly pronounced in rural areas since the supply of welfare, infrastructure, and services is limited, and finding work for two spouses is more complicated. As recruitment measures, respondents propose branding, networking, offering fringe benefits to employees, enhancing the work environment, highlighting unique natural surroundings, and sharing key competence among small firms. In addition, offering compelling work tasks, delegating responsibility, work rotation and stability are put forward as measures to reduce turnover. The tourism industry also contributes to a more attractive labor market and residential area, in terms of a broader supply of services within active and cultural experiences, food and drink, trade and transportation.

Firms in Vestland seek financial capital to introduce and promote new products, invest in new fixed capital inputs, and renovate their properties. Many businesses experience fierce price competition from abroad and challenges in attracting new financial capital. Some respondents see the choice between consolidation and independence as a trade-off between professionalism and uniqueness.

The tourism industry in Vestland is subject to a wide range of changes in the surroundings regarding societal events, the international economy, regulations, external marketing efforts, technology, and transportation. Some respondents believe that world events have forced the tourism industry in Vestland to become more flexible and adaptable to changes. Other respondents believe that tourism firms may gain from actively responding to exchange rate fluctuations and hedging between foreign markets.

Limitations in accessibility related to aviation capacity and local transportation are perceived as competitive bottlenecks by many, especially in remote areas. Key public measures proposed in this regard are seamless integration of transportation solutions and more flexibility in regulations concerning last-mile transportation and transportation to tourist destinations. Particularly in the peak season, destinations seek an efficient spread of tourists and an expedient connection to gateways and hubs.

While respondents are generally satisfied with the marketing efforts of Fjord Norway, most are both frustrated and resigned towards what they perceive as largely irrelevant and unresponsive marketing efforts and analyses from Innovation Norway and Visit Norway. Respondents stress the importance of cooperation with neighboring regions, the capital region, other coastal sites, and international marketing firms in the case of large firms.

5. SUSTAINABILITY CHALLENGES IN TOURISM MANAGEMENT

5.1 Background

When many tourists want to visit the same fjord and climb the same mountain, nature comes under pressure. Hardin (1968) coined the "tragedy of the commons" of common pool resources, which has become a central concept in economic and resource management. When every shepherd releases their sheep onto the same common land, the land's carrying capacity is exceeded, the sheep become malnourished, and the farmers become impoverished. Healy (1994) describes tourism landscapes as having the essential characteristics of common pool resources, leading to overuse and lack of investments. The tourism industry can face a similar fate when tourists overcrowd attractions, pollute fjords, and harm nature and wildlife. Since the mountains and fjords constitute a common good with public access ensured by Norwegian law, limiting crowding and regulating usage becomes challenging.

The Nobel laureate Ellinor Ostrom (1990) finds that many common pool resources are not overused and identifies several design principles of resource management. Building on Ostrom's principles, Huybers & Bennett (2003) identify factors such as the frequency and durability of interactions between tourism firms and the importance of the environment in the tourism product to induce self-regulation of common pool resources at nature-based destinations. In Vestland, nature is an essential aspect of the tourism product, and firms tend to interact and cooperate through destination organisations. In some natural areas, tourists must use infrastructure such as ports, roads, and parking lots to access nature. This infrastructure can help regulate tourism and finance visitor management. Alternative arrangements are necessary to preserve nature and fund management in other natural areas.

At small destinations, the interdependence among businesses may become a quality issue. When individual businesses are not sustainable, diminished attractiveness can affect other businesses in the destination (Candela et al., 2008). Quality and sustainability can be partially validated through certification schemes. According to Esparon et al. (2014), tourists report that environmentally certified businesses provide better services than non-certified ones, whereas Karlsson & Dolnicar (2016) argue that environmental certification has a significant impact on overall tourist demand but may influence tourists' choices in niche markets for green tourism. Other studies indicate that environmentally certified and "green" accommodation businesses have a more efficient production than other businesses (Hathroubi et al., 2014; Kularatne et al., 2019).

In this chapter, we aim to discuss how tourism management can ensure the sustainable use of nature and contribute to local economic activities. We ask the following research questions: "What are the key sustainability challenges and effective management strategies for nature-based tourism in Vestland, and how can improvements be made?" and "What organizational and financial arrangements enable the building and maintenance of tourist infrastructure to support sustainable nature-based tourism according to the tourism industry in Vestland?" One solution to the sustainability challenges is to improve and validate quality and sustainability through certification schemes at the business and destination levels. Environmental indicators have become important tools identified in research and applied in tourism management to operationalize and monitor sustainable tourism (Rasoolimanesh et al., 2023). For instance, the European Commission has developed a set of environmental indicators to monitor tourism, while in Norway, as in many other countries, businesses and destinations are certified as sustainable using a wide range of indicators. Thus, we also pose the research question: "To what extent is certification of destinations and businesses as sustainable, effective tools to spur the green transition of tourism in Vestland?"

5.2 Status Consideration of the Informants

5.2.1 Main Challenges in Adapting to the Climate and Nature Crises

Vestland county, like most of Western Norway, is known for its deep fjords, mountains, cultural landscapes, and coastal landscapes with small islands and communities. Our interviewees consider the untouched wilderness in Vestland and the cultural landscapes formed over centuries by human activity to be the most important nature values in Vestland. Respondents mention glaciers, rivers, fjords, and geological and biological diversity as important nature values.

Overall, reducing the significant emissions from the transport sector, including the airline and cruise industries, and road traffic to and within the region, is most often highlighted as the most severe sustainability challenge to the tourism industry in Vestland. Vestland's geographical position far from the large foreign markets necessitates long-distance traveling to visit the region from other countries. The necessary reduction of carbon emissions in the transport sector may increase future travel costs and reduce the competitiveness of the tourism industry in Vestland compared to destinations in more central parts of Europe. Similarly, establishing green public transport solutions is often mentioned as the most challenging problem to overcome at the local level. There is currently a lack of charging infrastructure for electrical tourist buses. Furthermore, there is no public plan to provide such infrastructure to enable the use of more electrical tourist buses in the coming years.

The second most mentioned challenge is land use conflicts. According to respondents, the reduction in quantity and quality of Vestland's nature due to tourism and energy development is a severe sustainability issue. Building gondolas, vacation homes and hotels in the wilderness reduce nature and habitats, adding pressure on biodiversity (i.e., the red-listed wild reindeer). The proposed development of new wind power and hydropower plants threatens to reduce recreational values related to landscapes and wild-salmon fishing. Discussion of these issues and potential solutions are topics in Chapter 6.

Several of our respondents mention the skewed seasonal profile, having to deal with tourism crowding in the summer season and low demand during the winter when asked to focus on their local destination's most severe challenge. The skewed seasonal profile leads to extensive use of seasonal workers and less year-round employment. Less year-round employment reduces tourism's positive social impact on the local communities and hinders incremental learning gained from working with sustainability over time.

Surprisingly, only one of the interviewees mentions the physical consequences of climate change as the most severe challenge to the tourism industry in Vestland, when confronting and adapting to the climate and nature crises. A respondent working with nature management says that increased rain and water have already increased the cost of maintaining the visitor infrastructure in national parks. Scientific reports (Hanssen-Bauer et al., 2017; Hisdal et al., 2021) predict increased flooding, landslides, flash floods, rising sea levels and storm surges in Vestland. In contrast to this rather grim outlook, several interviewees point to the potential positive effects of climate change, arguing that rising temperatures and droughts at competing European destinations might increase the relative attractiveness of destinations in Western Norway, with its comparatively wet and cold summers.

A few respondents consider regulatory uncertainty the biggest challenge, especially regarding introducing zero emissions regulations in the World Heritage fjords.

5.2.2 Good Practices and Issues in Sustainable Tourism Management

When asked to discuss good practices and issues in sustainable tourism management, perspectives diverge somewhat between the leaders of the tourism destinations and the tourism businesses. Most of the tourism businesses we interviewed emphasize their sharp focus on sustainability and mention several concrete practices to reduce the carbon footprint and the negative impacts on nature from their production and guests, such as offering activities involving bikes and kayaks instead of RIB-excursions and other polluting activities. The destinations emphasize the new knowledge and perspectives gained while certifying their destinations as sustainable. However, several destination leaders mention that their expertise and main responsibility are marketing tourism products, not visitor management. Both businesses and destinations highlight a number of related issues when discussing the challenges in tourism management. Most interviewees mention crowding at many tourist attractions in the high season as an important issue. The infrastructure in small villages in Vestland is often not dimensioned for the influx of tourists. Small roads, insufficient parking lots and too few toilets lead to dangerous situations, queues, and littering.

Many of the interviewees, across sectors, say improving the seasonal and geographical distribution of tourism to Vestland is a critical issue. Popular destinations in the fjords experience congestion in infrastructure, such as roads, ports, and trails, during peak season from June to August, while hotels and campgrounds reach full occupancy. In contrast, there is often available capacity outside the relatively short peak season of the fjords and throughout the year in less well-known destinations along the coast. Most destinations and businesses we have interviewed strive to prolong the peak season and increase the number of visitors when and where there is available capacity. A better distribution of tourists across seasons and geography will reduce the problem of crowding in nature and increase productivity and year-round employment. Some interviewees call for higher prices to reduce demand and negative impacts in high season, while others call for new regulations restricting the use of nature in vulnerable areas. Restricting the use of nature is unrealistic since it will require changing the popular law "Allemannsretten", which grants individuals the freedom to access nature for recreational activities.

Crowding in nature has become a severe problem in recent years. At Vestland's most popular nature-based attraction, Trolltunga in Hardanger, 100,000 tourists undertake an 8-12-hour hike to the viewpoint during summer. The rapid increase from 1,000 hikers in 2009 led to serious safety issues, indicated by over 42 rescue operations in one season in 2016. The increase also led to trail erosion, vegetation trampling, and littering (Nærings- og fiskeridepartementet 2023). The development gained negative attention in national media, which prompted a focus on visitor management and investments in trails, safety, and the road. According to several interviewees, consistent work with safety issues, i.e., building three emergency shelters and maintaining and improving the trail over several years, has significantly improved the situation in these mountains. Interviewees highlight that the experience from Trolltunga strengthened the visitor management expertise in the tourism industry in Vestland. However, due to social media, tourists discover other lesser-known mountain areas at an increasing pace, and problems related to crowding in nature now often emerge within just a few busy summer weeks. Sudden increases in the number of hikers lead to roadside parking on private property, littering and damaging fauna.

An important issue is the lack of responsibility for visitor management in large parts of Vestland. A recent survey showed that destination organizations in Western Norway must prioritize marketing and business-related activities. Only a few destinations say they also contribute to facilitating local nature-based experiences, i.e. through trail maintenance (Iversen et al., 2021). Destination leaders point to confusion regarding the responsibility for visitor management in these cases, specifically whether it falls upon the industry, the municipalities, or the county to finance, plan, and implement measures for handling crowding in nature.

National authorities finance visitor management at the national parks and a National Tourist Trail program through the Norwegian Environmental Agency. Establishing the tourist trail program in 2017 responded to the challenges associated with exceptionally high visitor numbers at a few trails. In 2022, 16 trails across Norway received funding, of which the Trolltunga trail received the largest share in Vestland, while Aurlandsdalen, Dronningstien, and Skålastien also received some funding. Interviewed nature managers at national parks, and Trolltunga report positive development within their area while observing unresolved issues related to increasing visitor numbers outside the national parks.

When national laws do not protect nature, the municipalities are legally in charge of land use management and visitor management. The businesses argue that municipalities must improve at providing facilities, managing tourist traffic, and preventing littering in forests and nature. As one nature-based tour operator says, commercial operators control their guests and their impact on nature; the problems start when tourists go into nature in large numbers without professional guidance. Several interviewees argue that municipalities lack funding and competence to handle the increased tourism in natural areas, especially when tourism increases fast. One nature manager called for an emergency visitor management service that could respond quickly to sudden crowding problems at specific sites.

5.2.3 Environmental and Sustainability Certification

Certification processes should help businesses, destinations, and municipalities to plan, implement, measure, improve, and communicate sustainable practices. The prevalent certification schemes within Norway's tourism industry include ISO certification Eco-Lighthouse, Swan Label, Norwegian Ecotourism, Green Key, and Blue Flag. The Eco-Lighthouse certification is Norway's most commonly used certificate and is managed and developed by a nonprofit foundation. The Eco-lighthouse certification involves meeting environmental standards, implementing eco-friendly measures, documenting compliance, and undergoing independent assessments. The European Commission recognizes the Eco-Lighthouse as being of a standard and quality on par with the EU's Eco-Management and Audit Scheme (EMAS) and international eco-certification schemes (ISO 14001). In addition, municipalities and regions can be certified as Sustainable Destinations. The destination must comply with 84 indicators measuring 31 criteria within five themes to be certified as sustainable. The Norwegian standard aligns with global requirements for sustainable tourism, approved by the Global Sustainable Tourism Council.

Among our respondents, the tourism destinations are generally very positive towards sustainability certification. The destination management organizations in Vestland are either certified or in the process of becoming certified, and all say that the certification process has increased awareness and concretized sustainability. They point out that an increasing number of international tour operators require documentation of sustainable practices, while individual travelers expect destinations and businesses to be sustainable. Thus, destinations and businesses might lose customers if not certified. One destination leader said that working strategically on sustainability increases profitability through reduced costs related to sick leave, energy usage, and waste management.

The tourism businesses we have interviewed are generally positive but also raise some concerns. Several certified businesses stress that the process increased their awareness and knowledge. They point to the potential loss of customers if not being certified as an important motivation. Additionally, one interviewee highlights the impact of the EU taxonomy in the financial sector, increasing the necessity for documenting sustainable practices when seeking financing. However, he believes most tour operators and customers do not place much weight on certification when deciding where to stay and go.

Several businesses argue that certification processes are too costly, bureaucratic, and unambitious. Some of the interviewed businesses have chosen not to certify their practices, even though they devote time and resources to reducing their environmental footprint. Several businesses would like to raise the requirements for Eco-Lighthouse certification. One interviewee argues that the commercial certification consulting market is raising costs and reducing certification quality. One of the businesses claims to observe unsustainable practices among other businesses certified as sustainable in their municipality.

5.3 Advice from the Informants

5.3.1 Solutions When Adapting to the Climate and Nature Crises

The businesses and destinations point to emission reductions in the transport sector and to the skewed seasonal profile as two of the biggest challenges for the tourism industry going forward. Reducing the emissions from transport into Norway is perhaps the most severe and challenging problem for the local tourism industry to handle. Zero-emission traveling to Vestland from other countries by train or electrical car is time-consuming and not a viable option for most tourists. Although several interviewees are optimistic about the development of electrical aircraft in the future, realistically, wide-scale implementation will take several decades. Adopting new types of aviation fuels may be a shorter-term measure to reduce the environmental impact of aviation emissions.

Several interviewees suggest related solutions to emission reductions in transportation into Norway and the skewed seasonal profile. The tourism industry in Vestland, through the official tourist board Fjord Norway, has agreed on a market strategy to promote sustainable tourism in Western Norway, encouraging longer stays, regional exploration, and year-round tourism. Another market strategy suggested by several interviewees, not part of the official strategy, is to turn the strategic focus from foreign to local markets. Longer stays and more tourists from local markets will reduce the need for transportation and the emission intensity per tourist. Focusing on local markets is also compatible with year-round tourism since short-distance travel is less time-consuming and simplifies tourism development outside peak season.

The interviewees point to measures to enable emission reductions from transport within Vestland. There is a need to electrify public transportation outside the county's capital city, Bergen. The national government should encourage and incentivize the transition towards electrical high-speed ferries, car ferries, RIBs, and electrical tour buses. Several respondents recognize the implementation of electrical car ferries and support the development of high-speed ferries initiated by Vestland county. Nevertheless, the current infrastructure faces limitations. The authorities must plan for and encourage investment in charger availability and perhaps increased grid line capacity serving hotels and attractions to enable electrification of the tour bus fleet. Infrastructure investment needs are discussed in more detail in Chapter 7.

Several interviewees argue that Vestland county should expand its focus on the local population's transport needs and better adapt public transportation to facilitate low-emission year-round tourism. The routes should help connect complementary destinations and markets, enabling tourists to explore Vestland using public transportation and thereby increasing the competitiveness of the tourism industry in Vestland.

A nature manager calls for smaller electrical buses to go back and forth between the most popular destinations in Vestland. As pointed out by another nature manager, bus routes are paused or significantly reduced when school vacation starts, reducing tourists' sustainable travel options. Similarly, Vestland county subsidizes a year-round high-speed ferry route between Bergen and Sogndal in the Sognefjord Region. At the same time, the non-subsidized high-speed ferry route operated by the same ferry company between Bergen and Flåm (in Møre og Romsdal county), two of Vestland's most visited tourist destinations, only runs through the peak season in summer. A hotel manager told us that the absence of a high-speed ferry connection between Bergen and Flåm substantially reduces the attractivity of the destinations along the Sognefjord outside the peak season. A new year-round public transport connection to Flåm would facilitate tourism development throughout the year at Balestrand (also in the Sognefjord Region). Several interviewees stress the importance of better public transport connectivity between destinations to enable year-round tourism.

5.3.2 Solutions for the Organization and Financing of Visitor Management

Tourism destinations, businesses, and nature managers all see the need to improve visitor management in Vestland. Answers diverge when asked what type of organization should be responsible for visitor management. Most respondents say the public sector must be responsible, while a minority say the tourism industry must handle visitor management, perhaps in collaboration with the public sector. Among those who think the public sector should handle visitor management, some point to the municipalities, others to Vestland county, and some say the national government should be responsible. However, several who argue for public responsibility foresee a cooperative organization consisting of municipalities, nature and tourism managers and business representatives. Surprisingly, only two interviewees mentioned the existing destination organizations as suitable for handling visitor management, even though they represent a tourism management collaboration between the public and private sectors already in place. None of the destinations argue that their organization should handle visitor management.

Respondents are more aligned with each other when challenged on how to finance visitor management. Most interviewees, businesses and destinations, argue that local user fees on excludable services and tourism taxes should finance visitor management. Norwegian law allows people to use nature for recreational activities for free. However, tourists use ports, roads and parking facilities to access nature. In principle, tolls and parking fees can finance measures such as investment in trails, security, and viewpoints, while port tolls can finance cleaning up pollution caused by cruise ships. According to Norwegian law, a landowner who has developed a recreational area can seek approval from the municipality to charge a road and parking fee at the site. The law prohibits using parking fees to fund expenses other than the parking area, while the road fee can fund other measures. For instance, Trolltunga AS charges 500 kroner for one-day parking and 200 kroner for using the road to let off hikers by the trail without parking. For example, the road fee and grants from the Norwegian Environmental Agency cover the security and trail measures at Trolltunga, and the parking fee covers infrastructure at the parking lot. Interviewees tell us that user fees work well in Trolltunga and should be a viable solution elsewhere.

However, user fees are not feasible in areas where hikers can access nature without using excludable infrastructure, such as a road or a parking lot. Most interviewees are cautiously optimistic about collecting tourism taxes as an alternative way of financing visitor management. However, several interviewees stress the importance of fairness and transparency when collecting and distributing tax revenue. Some respondents argue for collecting the tax through transportation, not accommodation, which is common in many other countries. One respondent pointed out that if the tax is placed on transportation, it is crucial to ensure that all modes of transportation are taxed the same way. Some respondents envision the tax collected nationally and distributed by the government. In contrast, others envision collecting taxes locally when tourists enter a high-density tourist zone to fund extra effort in visitor management within that zone.

5.3.3 Environmental and Sustainability Certification

As many international tourists visit several parts of Vestland on their journeys, businesses and destinations, complement each other, creating synergies between businesses and regions. If the certification of sustainable practices is essential for visiting tourists and tour operators, it is also crucial that as many businesses and destinations as possible become certified. One of the interviewees argues that since the nearby city destinations had not been certified yet, they could not fully exploit the marketing potential of being certified due to close links to uncertified destinations. We find that destination management organizations are very positive towards the sustainability certification of destinations, and several mention that they would like to see all destinations becoming certified. Destination management organizations seem to be satisfied with the costs and quality of the process, the insights they have gained and the market effect of certification.

In general, businesses have a favourable view of sustainability certification. However, several businesses argue that certification processes should be less bureaucratic and costly. A few businesses have not tried to become certified due to their limited resources, even though they have invested heavily in eco-friendly solutions. On the other hand, some businesses argue that unambitious requirements lead to too many businesses being certified. Thus, businesses have different views on how certification processes should be improved.

5.4Concluding Remarks and Future Directions

Our respondents argue that transportation to Vestland from other countries is the most complicated sustainability issue. For most people, Vestland is too far from international markets to travel by train, electrical buses or other low-emission transport methods. Aeroplanes, cruises, and private cars will remain the dominant modes of transportation for foreign tourists to enter Vestland for many years to come. One viable way of reducing carbon emissions is to change the composition of tourists in Vestlandet. In their shared strategy, the tourism industry in Vestlandet targets longer tourist stays and more year-round tourism. Another way would be to target tourism growth from Norway or Scandinavia rather than tourists from America, Asia, or southern Europe.

Tourism traveling within Vestland is primarily by car, bus, or boat. The electrification of the car fleet in Norway is underway, and charging infrastructure is already in place. Car ferries are increasingly electrified in Vestland, while the bus fleet and the speed ferries are planned to be electrified in the coming years. Thus, in the not-so-distant future, tourist travel within Vestland should be associated with far lower carbon emissions than today, given that future public policies provide the charging infrastructure and financial incentives for electrical bus fleets and speed ferries, as promised.

Another sustainability issue for the tourism industry is crowding, specifically in nature. Visitors should be more spread out over the year and across destinations to increase the benefits and reduce the costs of tourism. Interviewees report crowding issues across the most famous destinations in Vestland during summer. At the same time, there are too few tourists the rest of the year, leading to extensive use of seasonal workers who live elsewhere, while the communities in the region need permanent residents. Further, crowding in nature leads to littering, vegetation trampling, and safety issues. The lack of responsibility for visitor management in large parts of Vestland's nature is a severe challenge. The interviewees express the need to improve visitor management and the capacity to handle tourists and would accept the introduction of a tourism tax to finance this.

The destination leaders are very positive towards the certification of sustainable destinations. The certification process has increased awareness, improved sustainability, and helped marketing efforts. An essential motivation behind Innovation Norway's funding of the certification process is to offer destinations the tools to work systematically with sustainable development. However, neither the destination leaders nor the other interviewees mention the current destination organization as suitable for handling future visitor management or the income from a potential tourism tax. Several interviewees call for cooperation between the public and private sectors and nature managers to handle crowding in nature without reflecting upon the existence of the tourism organizations already in place.

Tourism businesses are generally positive towards business sustainability certification due to its effects on awareness and knowledge, but they also raise some serious issues. Several business representatives are concerned about the certification process becoming too costly regarding time and money spent on paperwork. Consequently, smaller businesses that have devoted considerable resources to becoming sustainable do not have the opportunity to pursue certification for themselves. On the other hand, a few businesses point out that the bar to becoming certified is too low, hampering the incentives to reduce the environmental footprint beyond the requirement.

6. CONFLICT RESOLUTION BETWEEN INDUSTRY AND NATURE

6.1 Background

The total economic value of nature includes values that stem from peoples' direct experience of nature and values arising when individuals appreciate nature for reasons such as altruism toward others and future generations. Most of the services nature provides are impossible to parcel out and sell to consumers, causing an inherent underprovision of nature through the market economy. The lack of market signals may also distort public decision-making, and the hidden costs of harming nature remain unknown and overlooked in land use decisions (Bateman et al., 2013). Land use changes are the most critical threat towards pristine natural landscapes and biodiversity globally (IPBES, 2019) and in Norway (The Norwegian Biodiversity Information Centre, 2021). Energy and tourism development in Norway are significant factors behind land use change and biodiversity loss (Iversen, 2022; Rørholt & Steinnes, 2020). Conflicts between local economic interests and broader societal and environmental interests will often lead to less-than-optimal outcomes from a regional point of view.

Tourism development creates community employment but may damage nature and reduce ecosystem services. For instance, Gössling et al. (2016) find that a unilateral objective about increased traffic volumes among destination companies may induce sustainability challenges (see also Oklevik et al., (2019)). Iversen et al. (2024) use economic analysis to highlight the inherent conflict between local market and national environmental interests in recreational home development and find that prioritizing economic income to landowners and businesses at the local level compromises the welfare of most locals and tourists. Similarly, energy transition is crucial for reaching our emission reduction targets. However, when developing new power projects, nature, landscapes, and the tourism industry are affected. Affected ecosystem services have no market price but are essential for human welfare. Thus, in this chapter, we ask the following research questions: "What are the most pressing conflicts between the tourism industry's use of nature and natural values?", "What are the most pressing conflicts concerning government and other industries' developments in nature at the expense of the tourism industry's interests?" and "How are land use conflicts between tourism development, other types of development and nature values best managed?"

6.2 Status Consideration of the Informants

6.2.1 Conflicts between Tourism Interests and Natural Values

When challenged on what they thought was the tourism industry's most problematic use of nature in Vestland, the interviewees mentioned several interrelated topics, most relating to building and activity in vulnerable nature.

The most mentioned topic across types of respondents was the developments and activities harming wild reindeer at Hardangervidda, Norway's most extensive mountain plateau. About 10,000 of Norway's and Europe's 25,000 wild reindeer live in extreme weather conditions on the plateau. However, the reindeer face mounting pressures, such as habitat fragmentation, due to developments, roads and hikers, climate change and illnesses such as Chronic Wasting Disease and Footrot. Many respondents mention the development of gondolas and ski resorts into the wild reindeer's habitat as troubling examples of unsustainable tourism development, potentially reducing the carrying capacity of an already red-listed species.

The building of gondolas is an example of controversial tourism development. Several gondolas in the mountains in Vestland have been developed in recent years or are in the planning stage. Loen Skylift opened in 2017 as the first gondola opening in Norway in over 50 years, and in 2019, a new gondola opened in Voss. Loen Skylift is a commercial success and has increased tourism to Nordfjord manifold in a few years, spurring the cruise port to become the fifth largest in Norway and increasing revenues to record levels at the historic local Hotel Alexandra. This growth has inspired several new projects across Vestland, including new gondolas under planning in Odda, Jølster, and Flåm. However, these new projects are experiencing passionate local opposition for different reasons, including the need for nature and wild reindeer protection and the fear of crowding due to tourism growth.

In Odda and Flåm, the proposed top stations will be close to wild reindeer habitat, and several interviewees highlight the added pressure on the wild reindeer as a severe issue with these projects. One nature manager comments that the project in Jølster is damaging as the gondola is planned in a pristine nature landscape far away from hotels, ports and other tourism infrastructure and would bring thousands of people close to the Jostedalen National Park, going against the intentions of the national park protection.

Some interviewees call for a stop to any type of tourism development in the wilderness, including hotels, attractions, and recreational homes. Several interviewees mentioned the development of recreational homes in the mountains as the most critical conflict between tourism development and nature. New recreational home developments often lead to the loss of wilderness, increased pressure on wild reindeer and changed landscapes. A project mentioned by several interviewees is the Eidfjord Resort project. Eidfjord Resort is a planned new ski resort stretching into the wild reindeer habitat, potentially constructing over 500 new recreational homes, commercial buildings, chairlifts, and an ice-skating rink. Vestland county, the County Governor, and the Norwegian Road Authority had severe objections to the project. Nonetheless, the Norwegian government overruled these and approved the plans. Due to financial issues, the construction has not yet started.

Some interviewees point out that increases in activity-based tourism negatively affect nature values through tourism crowding, vegetation trampling, and the extensive use of noisy transportation such as RIBs, helicopters, and scooters, which conflict with others' recreation. Last but not least, many interviewees mention cruise ships as the most significant conflict between tourism and nature due to crowding, greenhouse gas emissions and sewage discharge. Cruise ships are associated with tourism crowding with intense activity at a few attractions during a short period, using gondolas, visiting viewpoints, or doing activities such as RIB safaris. Cruise ships and other marine tourism transport accounted for 21 percent of greenhouse gas emissions in domestic and international tourist travel within, from and to Norway in 2018 (Grythe & Lopez-Aparicio, 2021). Since then, partly due to the war in Ukraine, cruise port calls have increased by over 30 percent (NOU 2023: 10), and cruise ships have the highest emission factor per passenger kilometre when comparing travel modes (Grythe & Lopez-Aparicio, 2021). Since 2019, emission requirements in Norway have prohibited heavy oil fuel use for tourist ships in world heritage fjords. Larger ships face progressively stricter emission requirements and a sewage and greywater discharge ban, and there is a 2026 deadline for zero emissions in world heritage fjords. The Norwegian government's ambition in Climate Plan 2030 is to reduce emissions from domestic shipping and fishing by 50 percent in 2030 (NOU 2023: 10).

6.2.2 Conflicts between Tourism and Other Interventions in Nature

When interviewees are challenged on how other industries' use of nature affects the tourism industry in Vestland, many mention new wind power and hydropower projects due to their negative impact on landscapes. Several informants also mention aquaculture and mining operations for similar reasons. In contrast, agriculture is mentioned for its positive impact on landscapes and culture.

Most interviewees mention wind power development as problematic due to what they perceive as a negative effect on tourism. There are now six wind power production sites in Vestland county, five of which are on the coast north of Sognefjorden, and the sixth is in Fitjar in the southern part of the county. In 2019, the Norwegian Water Resources and Energy Directorate presented a long-term plan for onshore wind power, highlighting 13 potential areas for wind power projects in Norway, three significant areas being Vestland county. The directorate's plan sparked intense local opposition from citizens and the tourism industry. Local tourism businesses worry about the impact of wind power on Vestlandet's natural beauty and scenic landscapes and subsequent adverse effects on tourism revenues. The increased opposition from the tourism industry might have contributed to the rejection of several proposed wind power projects in Vestland in the last few years.

New hydropower development projects are also regarded as problematic by most interviewees. One interviewee reported that the recently opened hydroelectrical Jølstra Power Plant in the Sunnfjord municipality has severely affected river and fish populations due to poor river and fish management, completely drying up the river during the winter. Consequently, locals reported the power company to the police for an alleged breach of river concession. The combination of flood risk, green transition, and high electricity prices is causing several political parties to advocate revising previous conservation decisions. Multiple proposed hydroelectrical projects in protected rivers in Vestlandet at popular destinations such as Flåm, Voss, Odda and Stryn are proposed. An interviewee in Voss express concerns that landowners and power companies use flooding risks in the river Vosso as an alibi for power development to create income for themselves, rather than considering the community's overall interests. According to another interviewee, reduced flooding risks are also used as an argument for hydroelectrical power development in Odda. A tourism business representative express frustration over the lack of weight put on tourism businesses' interests when discussing wind and hydroelectrical power development.

Two interviewees mention concern for reputational damage following acceptance of the dumping of mining residue in the Førde fjord, another example of public policy inconsiderate of the tourism industry's interests, as pointed out by one of the interviewees. Further, according to several interviewees, aquaculture damages the interests of the tourism industry due to aesthetics in fjords. Both hydroelectrical power projects and aquaculture put pressure on the wild salmon population.

6.3 Advice from the Informants

6.3.1 Conflicts between Tourism Interests and Natural Values

When discussing how to reduce conflicts between tourism interests and nature values, a recurrent piece of advice given by several destination leaders, business representatives, and nature managers is to make the decision-making process more inclusive. Across types of respondents, interviewees highlight the need for stakeholder and citizen involvement. Destinations and tourism businesses need an anchored tourism strategy with an implementation plan to offer direction towards shared goals. Collaboration between businesses, destination companies, municipalities, and counties is considered essential to steer the tourism industry toward sustainable practices. Nature managers stress the importance of public engagement in decision-making through as many public meetings as possible. Information and dialogue are necessary for legitimacy even when the final decisions do not change.

One business representative called for tourism development projects to be placed in central parts of towns and villages, such as old industrial areas, rather than in untouched nature. Nature should be left alone and utilized for hiking and nature-based activities. Both businesses and nature managers point to the need to elevate decision-making on the use of nature from tourism businesses and municipalities to the state level. As a nature manager mentions, adverse projects, such as the proposed gondola in Jølster, where private investors and municipalities want to build a new attraction in pristine nature, must be considered and stopped at a higher level of governance.

6.3.2 Conflicts between Tourism and Other Interventions in Nature

Most interviewees recognize the difficult trade-off between meeting Norway's climate emission reduction obligations, and thus a need for new renewable energy development projects, and the nature crisis, thus the need to protect nature. Several interviewees believe tourism's interests are being overlooked and not taken seriously. Interviewees among destinations and nature managers call for better coordination and processes leading up to decisions affecting nature involving public agencies, destinations, and businesses.

Others call for more overall inquiries before decision-making. One destination leader calls for research efforts in the economic valuation of nature. There is a need to include the monetary cost of reducing nature to compare with the economic benefit of development in cost-benefit analyses of land use decisions. Other interviewees would recommend better assessing and prioritizing new industries' future electricity needs before allowing for new energy development projects damaging nature and the tourism industry.

Several interviewees recommend elevating decision-making from municipalities to the state level. Electricity distribution to new industries, new renewable energy development projects, tourism business competitiveness and nature protection must be considered and planned for at the state level. Municipalities and businesses have too little regard for the bigger picture.

6.4Concluding Remarks and Future Directions

The conflicts between tourism interests and natural values in Vestland are multi-faceted and complex. The most prominent issue revolves around the impact of tourism development on the vulnerable wild reindeer habitat in Hardangervidda, where gondolas and ski resorts encroach upon their territory, stressing an already endangered species. The development of recreational homes in the mountains also leads to the loss of wilderness and increased pressure on wildlife.

Cruise ships are associated with tourism crowding and substantial emissions. The Norwegian Parliament enacted a zero-emission requirement for tourist ships and ferries in world heritage fjords starting in 2026, although the some suggested alternative fuels will most likely be allowed in a transitional arrangement until 2035. Handberg et al.'s (2022) analysis of the impacts of the geographically limited requirement predicts little effects on national cruise emissions due to a relocation of emissions and tourism from the world heritage fjords to other cruise ports in Vestland. Thus, although the restrictions aim to improve cruise sustainability overall, the policy will primarily affect the world heritage fjords and probably not lead to emission reduction in Norway or globally. These issues underscore the need for a more comprehensive approach to sustainable tourism development, analysing and accounting for unintended effects on markets and nature both at the destinations and in the surrounding regions.

Additionally, conflicts between tourism and other industries' use of nature, such as wind and hydropower projects, aquaculture, and mining, further complicate the scenario. The tourism industry expresses concerns about the adverse effects of these developments on the region's natural beauty and scenic landscapes, which can ultimately impact tourism revenues. Given the urgent demand for clean electricity production, the needed electrification, and the ongoing energy crisis in Norway, the government considers speeding up the new energy development projects to be critical. However, due to the negative consequences on nature and tourism, local resistance restrains the scale of new green energy production. Increased democratic involvement in energy planning can help reduce conflicts, yet local legitimacy depends on project processes and outcomes. Local interests, such as the tourism industry, must be heard and adequately compensated to foster acceptance of new renewable energy projects. There is a need to research and design decision processes that ensure legitimacy for wind power projects, improving democratic involvement and compensation schemes.

The advice from informants emphasizes the importance of inclusivity in decision-making, with a call for stakeholder and citizen involvement. Collaboration between various stakeholders, including businesses, destination companies, municipalities, and counties, is essential for steering the tourism industry and society towards more sustainable practices. Balancing economic and environmental values is a challenge in management across destinations and regions. We recommend improving land use policies in Norway to improve the consideration of national environmental values in local decision-making. The inherent problem is the local management of regional and national public goods. The recommended solution is strengthening the protection of nature or incentivising municipalities and landowners to safeguard nature, for instance, through taxing the use of nature or subsidizing its protection. The guiding principle is to align local and national interests. Elevating decision-making to the state level, especially for projects that could adversely affect pristine nature, is also recommended.

7. TECHNOLOGICAL POSSIBILITIES AND SOLUTIONS

7.1 Background

In parallel to the green transition, the tourism industry and its surroundings are adapting to significant technological developments. Technology may help the tourism industry meet the green transition and find new sources of income and efficiency improvements. However, it also requires resources and facilitates new arenas for competition.

Technology opens new possibilities for tourism firms in product development, production processes, organization, and marketing. Smart tourism and tourism flows depend on digital facilitation. Cloud service technologies and ICT contribute to better decisions of tourism enterprises in business planning and improve tourist experiences (Gretzel et al., 2015; Shafiee et al., 2019). Mobile applications also provide tourists with new opportunities to plan trips and experience destinations (i.e. Dickinson et al., 2014; Kim & Kim, 2017). Digital tools and electronic communication may also make travel production and organization more efficient.

Other relevant topics on green tourism and technology include digital marketing opportunities and environmentally friendly transportation (see Pan et al. (2018) for an overview). We focus on how the tourism industry is affected by changes in the technological surroundings, including transportation and electronic communication.

Moreover, technological progress constitute an crucial development patterns that occurs in parallel to the green transition, occasionally with interection effects. In this chapter, we seek to achieve a better understanding of how new opportunities and challenges for tourism during the green transition. We ask: “How do new technologies create new opportunities for tourism firms, and how should they be exploited?”, “How do digital solution contribute to the the tourism companies’ organizational work, and how should the respond?”, “How do the possibilities of digital marketing and digital booking systems affect the competitiveness of Vestland’s tourism firms and their optimal behavior?” and “How will the tourism industry be affected by the technogical infrastrastrucutre in the years to come, and how should the infrastructure be dimensioned?”

7.2 Status Consideration of the Informants

7.2.1 Technology that Enhances the Tourism Experience

Technology that enhances the tourism experience is a topic which aroused varied interests among the interviewees. Whereas many consider tourism-related software and new technological tools to be a way to strengthen other tourism products, some firms believe that they are far from the core of their businesses. Technology provides new opportunities for tourism products, possibly enhancing the tourist experience. At the same time, many informants express that technology's importance in tourism is exaggerated. Several respodents underline that technological solutions will be insufficient for good hospitality and that tourists are not attracted to the region due to fancy technological solutions. Others point out that technological equipment may distract people from pure nature experiences.

One group of technologies highlighted by the informants is software tools, including computer software and mobile applications, which we here simply will refer to as mobile apps. The areas for use for mobile applications (henceforth referred to as mobile apps) and computer software cover GPS-based tourism information, safety information, seamless interactive tourism solutions, key cards, public transportation, seamless payment solutions, electrical charging facilities, taxi services, and virtual reality. One informant highlights that many elderlies have problems with mobile applications, but less and less, as digital competence in this part of the population is increasing. Another destination is working on open artificial intelligence solutions. Yet another interviewee underlines the importance of mobile apps in safety management, as they can provide safety information and advice to tourists and help tourists when incidents occur.

During the corona pandemic, the scanning of restaurant codes with subsequent auto references to webpages with menus and possibly also options for ordering became prevalent, partly replacing waiters and waitresses at some restaurants. In other restaurants, payments at each customer's table were replaced by bank payment stations, serving several tables. Other informants point to the Norwegian payment app, Vipps, as a considerable contributor to more efficient financial transactions. Cruise ships and railway operators offer GPS-controlled guiding with a choice of languages, stories, and access through QR codes or mobile applications through a joint venture named Voice of Norway. In this context, one informant highlights that such guidance does not disturb other travelers. Another interviewee believes the sharing economy will play a more prominent role in tourism in the coming years concerning renting and lending equipment and properties.

Respondents also point out apps associated with the Norwegian trip planning website, UT.no. At one relatively popular destination, Sognefjorden, they also have their own website (i.e., Fjordmap.no) with an interactive map where their products appear. One destination has digitalized a nature walking trail with activated video and voice experiences in English and Norwegian. Another destination has established a virtual reality app for local attractions at the web page kulturvandring.no. Another respondent points out that mobile ticket systems are developing and becoming more mature within transportation, enabling smoothing transportation volumes and price differentiation outside public transportation. Nevertheless, many consider the lack of seamless interaction between applications for public transportation across counties a problem. Many informants also worry about the coordination problem associated with the need for unitary and complete provision of tourism information at one place, rather than fragmentation of the information across many apps and websites.

Technological equipment is another technology enhancing tourism experiences, which is somewhat less prevalent than mobile applications. When it comes to physical technologies, means of transportation Some of our respondents are at the forefront concerning the internet of things and electrified solutions for micro-mobility applied for active experiences in nature and on-site transportation. means are rented out to tourists or offered as a part of the package. Important trends in this regard include electrification and automatization. Some local actors are considered to be at the forefront internationally, concerning the internet of things and electrified solutions for micro-mobility applied for active experiences in nature and on-site transportation.

7.2.2 Digitalization of the Tourism Firms' Organizational Work

There is wide consensus among our interviewees that digitalization has helped to make organizational work within tourist firms more productive. Several respondents say that digitalization and updating of digital systems over time have contributed substantially to a more efficient administration. Some respondents consider digital organizational tools a new standard for the whole business sector. However, they do not think that digitalization of the organizational work has much to do with the bigger picture for the tourism firms.

Respondents are primarily enthusiastic about digital communication technology. Norwegian tourism is a cluster-based industry with many intra-industrial meetings compared to other industry, making digital meeting tools relatively important. Solutions such as Teams and Zoom help to significantly reduce the need for internal travel, although newly obtained contacts may also lead to new meetings, and some see a need for declining some of the many digital meeting requests. These technologies also often contribute to more efficient communication within companies. Digital communication solutions were perceived as accelerated by and particularly important during the corona pandemic. Several respondents state that more digital meetings than before the corona pandemic contribute to a more profitable and sustainable tourism industry. One informant highlights the importance of allocating funds to data security and privacy protection.

For data storage, several respondents point out that they use cloud solutions and software for accounting and economic management in their daily operations. Some respondents highlight that cloud solutions enhance data security and productivity. One interviewee points out that the tourism industry does not distinguish itself that much from other industries in this regard. Some respondents also say that they do not use cloud solutions.

Representatives for accommodation and transportation companies report that they carry out or aim to carry out advanced data analyses to improve business operations in the form of systems work related to financial analysis, human resources, internal control, operational analysis, salaries, and sustainability, among other examples. Respondents expressed that many small firms struggle with limited capacity and competence to follow up the potential that lies within information technology. Measuring digital visits and booking activities helps firms gain a better market understanding, inter alia in terms of when the booking takes place and from whom. For food and drink services and active and cultural experience services, the markets were often perceived as more transparent, making such analyses less relevant. Many smaller firms do not have the competence or time to exploit big datasets.

As accommodation involves managing a considerable amount of real estate with varying utilization, smart solutions for electricity consumption are important tools to reduce costs. Old real estate mass at many destinations further increases the need for cost-saving solutions. The respondents mention several measures such as smart electricity solutions, meaning automated adjustment of electricity consumption, for example connected to light and heat. Other measures include ordering of follow-up energy reports and insulation of buildings. Some respondents point out that environmental and profit gains from energy savings also play a key role across various modes of transportation, as well as for heating, and in energy intensive work tasks.

In addition, some informants use apps for handicraft purchases.

7.2.3 Digital Marketing and Digital Booking Solutions

Digital marketing allows for clear visibility and better market analyses. Some respondents say digital marketing makes it much quicker to target customers than before, when market campaigns were much less customized. Moreover, digital marketing allows for the publication of digital brochures and ad hoc campaigns that can be adjusted instantly, as their success in terms of reach is measured. It is pointed out that websites and booking solutions also represent a way of communicating with customers.

Although some firms succeed in exploiting their exposure potential to reach out to more customers, it is often easier for larger firms to take advantage of digital marketing opportunities than for the small ones. Still, some firms appreciate the independence that follows. Digital marketing implies more responsibility and increased autonomy and independence for the firms in their marketing activities compared to earlier. To be discovered and recommended by travel reviewers is ideal, but it requires that one has something unique to offer. The most specialized firms that distinguish themselves considerably from others often also benefit from the transition to digital marketing. Meanwhile, many smaller firms struggle with positioning in the digital marketing landscape, possibly failing to provide transparent information on accessibility, availability, facilities, and opening hours.

Digital marketing channels and social media (e.g., Facebook, Instagram and TikTok) open up great opportunities for tourism players to tailor their marketing and test marketing campaigns, but also expose them to increased competition. Social media constitutes a significant marketing platform for firms that are able to reach out to many potential customers by building a large number of followers or creating spectacular posts that receive much attention. Competence and awareness of the role of social media have increased over time. However, many informants find social media resource-demanding to follow up in a dedicated way and are uncertain about the value added by regular social media activities. Recipients of digital marketing campaigns are often bombarded with impressions, which may cause them to become tired and bored, so marketing campaigns should aim to hit a nerve. This is also important for obtaining shares, comments, and other responses on social media.

Firms are no longer dependent on newspapers and leaflets in their marketing. Nevertheless, the obsolescence of old physical marketing systems is perceived as a challenge by some firms. Some respondents point out that traditional physical marketing is still needed to attract tourists who are less present on digital platforms, such as elderlies and people from less digitalized countries than Norway.

Firms coordinate and cooperate on marketing with and through the local destination companies and potentially also local industry organizations and municipalities. Destination companies may still play a key role in marketing local firms, particularly the smaller ones. Nevertheless, lack of coordination, cooperation, interactivity, and integration are pinpointed by many as challenges in the digital presentation of local tourism products. The largest tourist companies commonly have established long-lasting marketing cooperation with international tourist firms such as travel agencies.

Digitalization has also resulted in fewer national booking channels as the booking process has become more decentralized. Digital booking solutions work more seamlessly than traditional booking solutions on several levels and reach more people. On the other hand, international online travel agencies (e.g., Booking.com, Hotels.com and TripAdvisor) also take a significant part of the income and place restrictions on the accommodation facilities' possibilities to differentiate prices. It is decisive to appear in searches and be visible in relevant booking monitors (e.g., Google Search and the Norwegian trip planning website, UT.no).

Many respondents also experience great frustration about what they perceive as large and required commissions and impediments to price flexibility placed upon them by international online travel agencies. Some respondents connect the discussion about international online travel agencies to a discussion about local value added and the alleged exploitation of market power by the major American technology companies operating the booking solutions. Yet, many respondents also pinpoint the importance of the online travel agencies' marketing efforts for obtaining visibility and attracting foreign tourists. Moreover, international online travel agencies are considered to have economies of scope and scale advantages in their marketing and booking services, which opens opportunities to reach more potential customers. Besides, it is difficult to compete against these companies, as their interfaces are professionalized, and the consumers typically choose familiar solutions.

Digitalization of booking systems provides a better basis for facilitating the right consumer experience and meeting the customers' expectations by customizing the content of the stay, such as room types, meals, and other needs and wishes. The relevance of booking solutions depends on target groups and products. They are important for accommodation services, particularly in attracting long-distance travelers from digitalized countries.

Several respondents express that Norwegians are relatively digitalized compared to tourists from other countries of origin, which is also reflected in differences in booking behavior. For many accommodation firms, double booking and cumbersome prepayment solutions constitute substantial problems. Moreover, booking systems are costly to develop and often do not speak to each other. A lack of digital competence often aggravates these issues.

Bookings can also be made through the websites of Fjord Norway and Visit Norway. Fjord Norway and the underlying destination companies contribute to marketing and booking systems of the local firms, which is perceived as particularly important for small firms. Fjord Norway has created a website with coordinated tourist and marketing information, where six out of 14 destinations are now connected to the related system. Some respondents report substantial improvements in these booking systems during the last year. Furthermore, some of the respondents from the destination companies underline the importance of offering unique products that distinguish them from the neighboring destinations.

In cooperation with some of the underlying destinations, the marketing initiative Go Fjords of Fjord Norway has developed the booking app Billberry. By some respondents, the app is considered as an important, if immature, digital marketing initiative. It focuses on activity booking, but is also open for accommodation booking. In addition, Visit Norway and Innovation Norway are important for the marketing of the region, but many respondents consider their marketing efforts less targeted and relevant.

Booking ahead is particularly important for accommodation and long-distance passenger transportation. Nonetheless, it is becoming increasingly relevant for other tourism segments as well, such as experience services, food and drink services, and short-distance passenger transportation. For businesses, digital exposure and with opportunities is practically a must for accommodation businesses. Thus, accommodation services function as a possible booking and marketing channel for firms in other parts of the tourism industry.

7.2.4 Technological Surroundings

Our respondents argue that it is difficult to be competitive in the absence of the necessary technological infrastructure. Overall, technological infrastructure is considered a hygiene factor rather than a motivational factor (i.e., its absence will cause dissatisfaction, but by itself, it is not enough to give tourists a positive experience).

The informants generally consider electrification of the transportation sector as essential contribution to a more environmentally friendly tourism industry in Vestland. Some informants have read and received feedback that Norway, in general, and Vestland county, in particular, have gained a slight competitive advantage and received international attention for the electrification of transportation, including vehicles, buses, and ferries. Nevertheless, many informants consider the lack of charging infrastructure a considerable barrier for the regional tourism industry during the green transition. Moreover, charging equipment for vehicles and ships is increasingly perceived as crucial for destinations' attractivity in Vestland, as well as for ensuring environmental sustainability in the industry.

Some respondents in urban areas are satisfied with the regional charging infrastructure, while others feel encouraged by the regional expansion of charging facilities. Nonetheless, respondents in rural locations are worried that electrification of the transportation sector will come at the expense of the expansion of the local public transportation offer. Some respondents describe a mismatch between the location of charging stations and the location of shops, as well as other services and infrastructure.

Insufficient electrical capacity is highlighted by many as a considerable challenge at many destinations, which causes difficulties for objectives on year-round tourism and environmental sustainability. One interviewee believes that standardization of electrical chargers will mitigate this challenge to some extent. Long distances between charging stations are also highlighted as a safety and security issue. Some respondents point out that convoy driving across Norwegian mountains in rough weather conditions becomes even more challenging when electrical vehicles are involved. Most accommodation providers offer electrical charging, often in the form of fast charging. Some interviewees note that the tourism industry's need for charging facilities is uneven over the different seasons, with a peak in the summer. Other informants are worried that the power network and the public hub charging infrastructure at large junction points are undersized for the complete electrification of transportation.

Charging electrical buses and trucks is perceived as difficult, as a much bigger charging capacity is required than for cars. In the case of maritime transportation, electrification is highlighted as a challenge for cruise ships and ferries. One informant is worried that the lack of charging facilities may cause hold-ups for electrified buses, ferries and ships or force them to use diesel generators as a backup. Another interviewee believes that future electrification of the maritime passenger transportation segment will depend partially on the regulation of the cruise industry.

Some respondents also mention electrification of the aviation sector in this context. The tourism sector mainly depends on aviation to attract long-distance tourists, which involves considerable emissions of climate gases. Electrification may help mitigate these emissions and respond to increasing awareness and concerns about global warming among travelers. It is highlighted that Norway has a considerable regional aviation grid based on publicly subsidized routes, and that the leading regional carrier, Widerøe, is making large investments in the aviation sector. Electrification of flights across longer distances with larger airplanes lies longer into the future. Here, hydrogen, biogas and other fuels with a reduced carbon footprint may help reduce global greenhouse emissions in the more proximate future.

The respondents consider infrastructure for electronic communication a hygiene factor, which induces competitive disadvantages when absent rather than competitive advantages when present. One respondent expresses that the use of electronic communication tools is crucial and makes the work of large corporations in the tourism industry much easier, both internally and externally. The person in question finds that such communication is particularly important when operating internationally and within rural areas, as physical connectivity is relatively weak. Mobile and wired broadband coverage is commonly perceived as satisfactory at destinations of a certain size. Many respondents at such destinations say there are no major issues related to mobile coverage and refer to investigations showing relatively extensive broadband coverage in Norway in general and in Vestland in particular, despite large and sparsely populated land areas. Some informants have also noticed substantial improvements in both mobile and wired broadband coverage in recent years.

Yet, several respondents in the more rural areas mention challenges with coverage in the most peripheral locations. Absence of wired broadband constitutes a disadvantage for firms in these locations. In addition, some dedicated tourist destinations with limited mobile broadband coverage are unable to benefit from online tourism mobile apps and lose out on the free publicity provided by social media posts published by visitors during their visits. Improvements in mobile coverage are also important with regard to safety and security. There is concern that a lack of mobile phone coverage in rural and landslide-prone areas may hamper emergency communication when needed.

One respondent says that download opportunities for tourism information through local electronic networks on ships and trains decrease the need for high download speeds and capacities in other locations. Cruise operators use signal amplifiers to capture mobile signals from several mobile network providers and offer their own wireless solutions to their guests and crew. Mobile coverage is also often absent in tunnels.

7.3 Advice from the Informants

7.3.1 Technology that Enhances the Tourism Experience

Although many respondents see technological opportunities that may enhance the tourist experience, there is also a considerable minority that perceive the technology optimism in the tourism industry as excessive. Many respondents stress the importance of a human host who is physically present. The skeptical interviewees express reluctance towards spending substantial resources on software and technological equipment to enhance tourists' experiences. These respondents believe many businesses have invested too much time and money in failed digital solutions. Several respondents also stress the importance of pure nature without digital disturbances.

Mobile apps are perceived as important for the direct dissemination and sharing of tourism information. For apps to be successful, they must either involve some sort of payment or attract more travelers to the region. Successful apps are often both expensive and challenging to develop. Some respondents also point out that it would be advantageous if one could exploit the tourists' familiarity with international apps or at least have common mobile apps for several tourist actors. Most respondents point out the benefits of and the need for coordinating travel apps linked to travel experiences, transportation, and payment. Several respondents argue that successful apps should ensure comprehensive functionality and interoperability, which provides international software companies with an edge. Nonetheless, they acknowledge that thriving local apps represent local cooperations or peculiar functions. Other interviewees believe that Innovation Norway and Visit Norway should improve the quality of their advice on specific tourism.

One respondent sees innovation opportunities in measuring tools for tourist movements and revealed preferences. Yet, the person concerned admits that the technology has moved somewhat faster than they have been able to keep track with due to limited digital competence. Several respondents call for more seamless, informative and marketed mobile transportation apps. One respondent mentions that apps may help redirect traffic in the tourism industry's preferred direction. Another interviewee encourages the personal transportation providers in Vestland to be inspired by the coastal card applied in the neighboring county, Møre og Romsdal.

One interviewee underlines that mobile apps enhancing the tourism experience through guidance are costly, and that it will be difficult to recoup any of these costs through user charge.

However, indirect positive effects may justify them, according to the respondent. Another respondent believes that development costs for local apps may be offset by small positive contributions to tourists' visiting experiences and the prolonging of seasons. By the same token, yet another interviewee believes that marketing local possibilities through technological tools may help tourists discover local attractions and thus make them stay longer.

One informant advocates for interactive map websites indicating the tourism products available to connect better with the customers. Another respondent talks about a larger firm working on digital visiting solutions for potential tourists who decide against visiting in person due to affordability or sustainability concerns. Some firms use apps actively towards guests when providing information and conducting marketing.

Fewer of the informants share advice on physical technologies that improve tourist experiences. Some respondents believe that electrified means of micro-mobility, such as electrical scooters and electrical boats, can help providers of active experiences to develop a wider and more attractive product spectrum. A respondent from an accommodation firm recoomment wired electricity solutions to solve battery challenges with otherwise successful digital key cards.

7.3.2 Digitalization of the Tourism Firms’ Organizational Work

Many respondents are enthusiastic about the organizational opportunities and the efficiency improvements digital tools provide. Moreover, many see measures of digitalization that may ease some of their workload.

Optimal use of electronic communication in direct communication requires awareness and new possibilities for when you should be physically present and when you can meet digitally, according to a group of respondents. Some of them point out the need to limit the pressure of digital meetings, which from their point of view has increased with the new technology. One underlines that firms should not be overly ambitious with regard to the number of meetings and self-inflicted extra work, induced by wider meeting opportunities.

One representative for nature conservation interests stresses the importance of digital management tools for environmental and sustainability management. Such tools enable firms to follow their climatic footprint, accurately enforce sustainable human resource policies and keep track of relevant rules and laws on sustainability. Other respondents see digital tools as vital for certification.

Yet another respondent believes that the industry has the necessary competence to succeed in its digitalization, but that this requires sharing of competence and joint meeting arenas. Small firms mention the lack of a major coordinating actor with expertise in smart solutions that can put together packages for activities, accommodation, and power management on the same platform. Some of the firms call for joint digital resources and assistance from the coordinating organizations, such as the destination companies, to carry out good management analyses of collected data.

With regard to the collection, processing and analysis of data, many respondents see a potential in mapping and analyzing connections between bookings, website visits, price, package offers, traffic on social media, and bookings. Informants among our interviewees from larger firms have faith in collecting and analyzing data to provide customized and high-quality products. The larger integrated chains look to the railway and aviation industries for inspiration on how price setting and market prevalence could be professionalized and become more mature. Nevertheless, some representatives of the interviewed firms do not see the need for cloud solutions, and one of them still prefer to physical mails for much of the respective firm's communication.

Many respondents also recommend prioritizing digital and traditional energy efficiency measures, notably concerning buildings and transportation. One respondent mentions local firms that have established their own smart systems for energy saving, which they have adapted to their operation. Another informant with knowledge about maritime passenger transportation industry activities stresses that energy efficiency is important to improve the involved firms' margins.

7.3.3 Digital Marketing and Digital Booking Solutions

Several of our interviewees believe that tourism firms may benefit from tailored marketing directed towards targeted groups, and from ensuring priority in specific search engines. The gain potential is considered especially large for specialized firms. This process will also get feedback from the data collection and data analysis, as it is possible to see who visits the web page and chooses to book. Nevertheless, such analysis will require technological competence, making the process more difficult for small firms without coordination and competence sharing.

Some informants argue that marketing along many parallel channels will be required to succeed. Major firms use digital platforms for various marketing measures to enhance visibility and promote local tourism products. Some respondents have recorded marketing videos for their destinations, which they perceive as substantial successes. Digital marketing is also highlighted for extending and building shoulder seasons. One respondent highlights digital solutions to show visitors what is on offer locally, which may help prolonging tourists' stay. Some informants highlight that digital marketing is more environmentally sustainable than physical marketing, as it requires less printed material and traveling.

Several respondents describe a trade-off between wide marketing catchment through sales by international online travel agencies and product control. They call for a local sales and marketing apparatus with a greater understanding of the local value creation than agencies such as Booking.com, Hotels.com, and TripAdvisor. One respondent from a tourist business claims that the local marketing may become suboptimal when destination companies take charge, with a consecutive loss of control over the guest in the value chain for the local firms, as they do not longer sell tourism products directly. Some respondents embrace destinations' local knowledge and presence in key markets as an important supplement to digital marketing.

Many informants point out a need to attract tourists in ways that ensure that a greater proportion of the value creation remains locally, at the expense of the big online traveling agencies. Moreover, they argue that small tourism businesses should join forces on marketing or be marketed by destination companies or larger businesses who seek to present their destinations as more complete tourism destinations. One representative for a large firm proposes that they can take such a role on behalf of their smaller and local collaboration partners. By the same token, another respondent representing a large firm claims that larger firms help smaller firms with fewer marketing resources through their own marketing channels and customer reach.

As many social media platforms exist, particularly small firms must try out and choose which they want to prioritize. Some firms purchase marketing packages, including social marketing handling, involving the choice of target groups, frequency, search engine optimization, and so forth. Other respondents follow the geographic profiles and visiting numbers on their websites and on social media to evaluate and improve their digital marketing.

A few respondents also find it problematic that local destination companies conduct marketing while they do not sell tourism products. They finds it is crucial to combine the marketing function with a sales function with good control over the guest. While respondents otherwise have positive attitudes towards the regional marketing by Fjord Norway and the destination companies, many express dissatisfaction about what they perceive as imprecisely targeted marketing by the national development bank, Innovation Norway, and the national destination company, Visit Norway.

Some respondents call for digital competence enhancement in customer journeys and content. Other informants fear that clever digital developers will keep much of the profits related to improved, more user-friendly, and better integrated sales systems for and between firms. In particular, they see this as a challenge for smaller firms with fewer alternatives and less bargaining power.

As for marketing solutions, many respondents call for joint booking solutions, hosted by destination companies and other overreaching organizations in the industry. Some interviewees highlight the importance of collective digital booking channels for firms in the same area, with an extensive, varied, attractive and coordinated product supply. Many respondents describe the value of having a collection booking system, which makes it easier for actual and potential travelers to find their way around. They believe that it should create a desire to travel and make it easy to order. Many believe it would be advantageous to offer a total package of various tourism products for guests who want a simple solution.

One respondent emphasizes that quick answers and a high service level in booking requests are important for attracting orders. Another informant points out that huge investments will be required to develop a customized and comprehensive booking system to reach relevant target groups. One large firm analyzes and optimizes pricing weekly based on the booking system inspired by the railway and aviation industries. Yet another respondent is satisfied with their own booking system, but he/she underlines the importance of being visible on multiple interfaces.

One respondent holds Innovation Norway and Visit Norway responsible for finding complete and efficient booking solutions, which they think are vital for the tourism industry's further development. The person in question criticizes Innovation Norway for changing advice about joint booking systems. The respondent illustrates this by the booking system TrekkSoft, which was first recommended and then advised against, as if the Norwegian tourism industry was their experimental chamber. The person concerned calls for standardized and seamless solutions for a wide range of tourism products rather than a patchwork of local ones and mentions Blueberry as a possible solution in this regard. The informant argues that the tourism industry should be a co-owner of the platform and that it should be well tested before full expansion in the whole industry.

7.3.4 Technological Surroundings

Many respondents point out that the electrification of various means of transportation has consequences for the dimensioning of the power grid. Moreover, several respondents argue that the power grid should be dimensioned in such a way that the local charging infrastructure is able to handle large electrical ships and a large number of electrical cars. One informant believes that energy hubs for sea and land transportation are a good idea, given that the power production is sufficient, and the maritime environmental regulation allows for future cruise tourism. Another interviewee advocates that vehicle charging stations should be located at public transportation hubs and junction points. Along the same lines, several other respondents recommend that the charging structure to be co-located with rest areas with public toilets, food and drink services, and retail options, possibly near local centers.

Sufficient dimensioning of port charging facilities at cruise destinations is important for predictability for the cruise industry. Respondents recognize that this is not solely a public responsibility. Nevertheless, some respondents at fjord destinations are concerned that lack of public facilitation and bureaucratic hindrances could cause hold-up problems. One respondent recognized regulatrory incentives for the electrification of the transportation sector. Stil, he/she encourages even stronger economic engagement from the county government. Two informants praise the county administration's work for improved charging infrastructure in Vestland, while two others call for even more efforts from the county government.

Informants at rural destinations call for national and local facilitation to expand mobile and wired broadband coverage. Only a few of the respondents are aware of the existing public support scheme for broadband expansion measures, operated by the counties on behalf of the Norwegian Communications Authority. The use of satellite phones is not considered as a fully viable alternative to conventional means of electronic communication, but mobile coverage is largely considered an acceptable substitute for wired broadband. Some informants argue that regional and national governments to a larger extent should prioritize mobile coverage at rural tourist attractions and tourist routes due to safety and security concerns.

7.4 Concluding Remarks and Future Directions

A considerable minority among our respondents express skepticism towards the exaggerated use of technology in tourism products and warn against misinvestments in technology. Many also stress the importance of having a local host and experiencing pure nature without digital disturbances. Still, the majority of interviewees see technological possibilities in their product supply. Several types of software are put forward in this regard, such as GPS-based tourism information, safety information, seamless interactive tourism solutions, key cards, public transportation, seamless payment solutions, electrical charging facilities, taxi services, and virtual reality. Whereas payment apps are generally considered a mature success, many worry about coordination challenges concerning sharing tourism information and seamless integration of public transportation apps.

For mobile apps to be considered successful, they should either involve payments or contribute to attracting more travelers. Apps are expensive to develop and should ideally be coordinated between local actors to ensure a wider range of use areas. Key attributes for successful apps mentioned by the informants include functionality and interoperability, seamlessness, and informativity. Other features considered to be important include the marketing of the app itself, and the apps' abilities to promote tourist products and sites in the products' surroundings.

Technology equipment constitutes another type of technology supporting tourism experiences, for example electrical means of micro-mobility (e.g., electrical boats and electrical scooters) and the Internet of things (e.g., drones and encyclopedias with tourist information). Such tools sometimes involve battery challenges, but these could be solved by for instance wireless electricity solutions. Smart electrical solutions are also highlighted as contributors to more efficient operations, particularly in the context of heating and transportation.

Interviewees agree that digitalization has contributed to more efficient organizational work. The presence of many digital tools is not seen as something unique for the tourism industry, but something that characterizes most of the modern business sector. Key tools pointed out by the respondents include digital meeting tools, cloud solutions, accounting tools, substainability management tools, and systems for payroll and human resource management. Some respondents from small firms call for joint data analytic resources to serve small tourism enterprises in exploiting big datasets. Among the larger tourism firms, some draw inspiration from the rail and aviation industries in their market analyses and price setting.

Digital marketing sharpens competition, enables instant changes in marketing campaigns and allows firms to communicate directly with their customers. It provides firms and destinations with new opportunities to reach potential customers and provides information on accessibility, availability, facilities, and opening hours. As many compete for the attention of the recipients of digital marketing campaigns, the advertising should hit a nerve. In the case of social media, a suitable medium for reaching the target groups should be chosen. However, the new opportunities also come at a cost, where small firms must choose some prioritized marketing channels. The new marketing channel is also easier to exploit for large firms and small niche firms than for small generic ones. Traditional physical marketing still attracts elderly tourists and people from less digitalized countries than Norway.

Many respondents call for more coordination, cooperation, interactivity, and integration in the digital presentation of local tourism products. Digital marketing is considered a tool to prolong stays and build traveling volume outside the peak season. Marketing cooperation and branding of complete destinations are highlighted as a necessity, especially for small companies, where Fjord Norway, the destination companies and larger companies are mentioned as coordinating players. Generally, there is much satisfaction with the marketing contributions of Fjord Norway and the destination companies but more scepticism towards what are perceived as less relevant efforts from Visit Norway and Innovation Norway.

Digitalization has also caused a decline in the number of national booking channels, while it has become crucial to show up in searches at relevant booking monitors. Digital booking solutions provide a platform for product customization and targeting. Online booking is crucial for accommodation and long-distance passenger transportation, but to an increasing extent, it is applied in other tourism services. Although many respondents appreciate the reach and the marketing opportunities provided by international online travel agencies, most are frustrated by the provisions and price rigidities that the agencies require. The respondents describe a trade-off between marketing catchment through the agencies and product control. Several interviewees call for extended cooperation on local booking solutions hosted by destination companies or other overreaching organizations in the industry. Lack of integration between different booking systems and between booking and payment systems occasionally causes problems, aggravated by a lack of digital competence in the smaller firms.

Technological infrastructure, such as electrical charging facilities and electronic communication infrastructure, are recognized as hygiene factors. Electrification of vehicles is considered necessary for the green transition. However, it also poses challenges in the form of few charging facilities in rural areas and vulnerability to harsh weather conditions. Several interviewees call for energy hubs and an adequately dimensioned power grid to handle the need for charging facilities for cars, buses, trucks, ferries, and ships. They argue that new charging facilities should be located near established facilities with a commercial service supply, like in local centres or transportation junction points. While some respondents are content with the county government's effort to roll out charging facilities, others call for more efforts.

Mobile and wired broadband coverage is mostly deemed satisfactory across Vestland, but a lack of connectivity may cause problems at the most rural locations and along train and ship routes. Such problems include the unavailability of online tourism apps, loss of social media attention, and absence of emergency communication. In this regard, some respondents call for more awareness about the public support scheme for broadband expansion measures operated by the counties with professional supervision from the Norwegian Communications Authority.

REFERENCES

Aalen, P., Iversen, E. K., & Jakobsen, E. W. (2019). Exchange rate fluctuations and demand for hotel accommodation: Panel data evidence from Norway. *Scandinavian Journal of Hospitality and Tourism*, 19(2), 210-225.

Bateman, I. J., Harwood, A. R., Mace, G. M., Watson, R. T., Abson, D. J., Andrews, B., Binner, A., Crowe, A., Day, B. H., Dugdale, S., Fezzi, C., Foden, J., Hadley, D., Haines-Young, R., Hulme, M., Kontoleon, A. Lovett, A. A., Munday, P., Pascual, U., Paterson, J., Perino, G. Sen, Antara, Siriwardena, G., Van Soest, D., & Termansen, M. (2013). Bringing ecosystem services into economic decision-making: land use in the United Kingdom. *Science*, 341(6141), 45-50.

Blumenthal, V., Landa-Mata, I., Iversen, N. M., Hem, Leif. E., Holmen, R. B., Flotve, B. L., & Krohn, C. (2023). Evaluering av Fjord Norge AS. TØI-rapport 1974/2023.

Candela, G., P. Figini, and A.E. Scorcu, (2008). The Economics of Local Tourist Systems, in R. Brau, A. Lanza, and S. Usai (eds.), *Tourism and Sustainable Economic Development: Macroeconomic Models and Empirical Methods*, Cheltenham: Edward Elgar.

Darbi, W. P. K., & Hall, C. M. (2014). Elite interviews: critical practice and tourism. *Current Issues in Tourism*, 17(9), 832-848.

Dickinson, J. E., Ghali, K., Cherrett, T., Speed, C., Davies, N., & Norgate, S. (2014). Tourism and the smartphone app: Capabilities, emerging practice and scope in the travel domain. *Current Issues in Tourism*, 17(1), 84-101.

Esparon, M., Gyuris, E., & Stoeckl, N. (2014). Does ECO certification deliver benefits? An empirical investigation of visitors' perceptions of the importance of ECO certification's attributes and of operators' performance. *Journal of Sustainable Tourism*, 22(1), 148-169.

Gretzel, U., Sigala, M., Xiang, Z., & Koo, C. (2015). Smart tourism: foundations and developments. *Electronic Markets*, 25(3), 179-188.

Grythe, H., & Lopez-Aparicio, S. (2021). The who, why and where of Norway's CO2 emissions from tourist travel. *Environmental Advances*, 5, 100104.

Gössling, S., Ring, A., Dwyer, L., Andersson, A. C., & Hall, C. M. (2016). Optimizing or maximizing growth? A challenge for sustainable tourism. *Journal of Sustainable Tourism*, 24(4), 527-548.

Handberg, Ø., Haug, K, Nerdrum, L., Abrahamoglu, S., Aslesen, S. & Pedersen, S. (2022) Samfunnsøkonomisk analyse av nullutslippskrav for turistskip og ferger i verdensarvfjordene. Menon-publikasjon nr. 102/2022.

Hanssen-Bauer, I., Førland, E. J., Haddeland, I., Hisdal, H., Lawrence, D., Mayer, S., Nesje, A., Nilsen, J. E. Ø., Sandven, S., Sandø, A. B., Sorteberg, A., & Ådlandsvik, B. (2017). Climate in Norway 2100 – A knowledge base for climate adaptation. Report no. 1/2017. The Norwegian Centre for Climate Services.

Hardin, G. (1968). The tragedy of the commons: the population problem has no technical solution; it requires a fundamental extension in morality. *Science*, 162(3859), 1243-1248.

Hathroubi, S., Peypoch, N., & Robinot, E. (2014). Technical efficiency and environmental management: The Tunisian case. *Journal of Hospitality and Tourism Management*, 21, 27-33.

Healy, R. G. (1994). The "common pool" problem in tourism landscapes. *Annals of Tourism Research*, 21(3), 596-611.

Huybers, T., & Bennett, J. (2003). Inter-firm cooperation at nature-based tourism destinations. *The Journal of Socio-Economics*, 32(5), 571-587.

Hisdal, H., Vikhamar-Schuler, D., Førland, E.J., & Nilsen, I.B. (2021). Climate profiles for counties – a knowledge base for climate adaptation. Report no. 2/2021. The Norwegian Centre for Climate Services.

IPBES (2019): Global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. E. S. Brondizio, J. Settele, S. Díaz, and H. T. Ngo (eds.), *Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*. IPBES secretariat, Bonn, Germany.

Iversen, E. K. (2022). Valuing ecosystem services to inform land use policies in Norway: methodological issues and applications of stated preference methods. Thesis NMBU.

Iversen, E. K., Jakobsen, E. W., & Engebretsen, B. (2021). Destinasjonsselskapenes verdiøkende rolle. Menon publikasjon 52/2021, Oslo.

Iversen, E. K., Jakobsen, E. W., & Holmen, R. B. (2015). Produktivitet i norsk reiseliv – Interne og eksterne stordriftsfordeler gir produktivitetsvekst. Menon, Oslo.

Iversen, E. K., Grimsrud, K., Lindhjem, H., & Navrud, S. (2024). Mountains of trouble: Accounting for environmental costs in local benefit-driven tourism development. *Tourism Management, 102,*104870.

Karlsson, L., & Dolnicar, S. (2016). Does eco certification sell tourism services? Evidence from a quasi-experimental observation study in Iceland. *Journal of Sustainable Tourism*, 24(5), 694-714.

Kim, D., & Kim, S. (2017). The role of mobile technology in tourism: Patents, articles, news, and mobile tour app reviews. *Sustainability*, 9(11), 2082.

Kularatne, T., Wilson, C., Månsson, J., Hoang, V., & Lee, B. (2019). Do environmentally sustainable practices make hotels more efficient? A study of major hotels in Sri Lanka. *Tourism Management*, 71, 213-225.

Nærings- og fiskeridepartementet (2023). Leve og oppleve. Reisemål for en bærekraftig fremtid. Norges offentlige utredninger (NOU:2023:10). Utredning fra et utvalg oppnevnt ved kongelig resolusjon 26. august 2021. Avgitt til Nærings- og fiskeridepartementet 30. mars 2023. Departementenes sikkerhets- og serviceorganisasjon. Teknisk redaksjon. Oslo 2023.

Oklevik, O., Gössling, S., Hall, C. M., Steen Jacobsen, J. K., Grøtte, I. P., & McCabe, S. (2019). Overtourism, optimisation, and destination performance indicators: A case study of activities in Fjord Norway. *Journal of Sustainable Tourism*, 27(12), 1804-1824.

Ostrom, E. (1990). *Governing the commons: The evolution of institutions for collective action*. Cambridge university press.

Pan, S. Y., Gao, M., Kim, H., Shah, K. J., Pei, S. L., & Chiang, P. C. (2018). Advances and challenges in sustainable tourism toward a green economy. *Science of The Total Environment*, 635, 452-469.

Rasoolimanesh, S. M., Ramakrishna, S., Hall, C. M., Esfandiar, K., & Seyfi, S. (2023). A systematic scoping review of sustainable tourism indicators in relation to the sustainable development goals. *Journal of Sustainable Tourism*, 31(7), 1497-1517.

Rørholt, A., & Steinnes, M. (2020): Planlagt utbygd areal 2019 til 2030. En kartbasert metode for estimering av framtidige arealendringer med negativ klimaeffekt. [Planned developed area 2019 to 2030. A map-based method for estimating future area changes with a negative climate effect]. Notater 2020/10. Statistics Norway.

Shafiee, S., Ghatari, A. R., Hasanzadeh, A., & Jahanyan, S. (2019). Developing a model for sustainable smart tourism destinations: A systematic review. *Tourism Management Perspectives*, 31, 287-300.

The Norwegian Biodiversity Information Centre (2021). Results from the 2021 Red List for Species. The Norwegian Red List of Species 2021.

Thomas, D. R. (2006). A general inductive approach for analyzing qualitative evaluation data. *American Journal of Evaluation*, 27(2), 237-246.

A. APPENDIX: CLASSIFICATIONS

In this appendix, we account for the regional and industry classification applied in the study.

A.1 Regional Classification

In Table 3, we have accounted for the regional structure in Vestland of Fjord Norway, the regional destination company that covers Western Norway.

Table 3: Organizational structure in Fjord Norway

Destination company	Municipalities	Comment
Visit Bergen	Alver, Askøy, Austevoll, Austrheim, Bergen, Fedje, Gulen, Masfjorden Modalen, Osterøy, Tysnes, Vaksdal, Øygarden	Mostly covered by Statistics Norway's tourism region "Bergen Region", which also includes Askøy, Bjørnafjorden and Samnanger and excludes Austevoll, Tysnes and Vaksdal. Tysnes is also member of Visit Sunnhordland.
Visit Fjordkysten and Sunnfjord	Askvoll, Fjaler, Hyllestad, Kinn, Solund and Sunnfjord	Covered by Statistics Norway's tourism regions "Fjordkysten" and "Sunnfjord"
Visit Hardanger	Eidfjord, Kvam, Kvinnherad, Ulvik and Ullensvang	Covered by Statistics Norway's tourism regions "Fjordkysten" and Kvinnherad, which also is member of Visit Sunnhordland.
Visit Nordfjord	Bremanger, Gloppen, Stad and Stryn	Coincides with Statistics Norway's tourism region "Nordfjord"
Visit Sognefjorden	Aurland, Høyanger, Luster, Lærdal, Sogndal, Vik and Årdal	Coincides with Statistics Norway's tourism region "Sognefjord"
Visit Sunnhordland	Bømlo, Etne, Fitjar, Kvinnherad, Stord, Sveio and Tysnes	Covered by Statistics Norway's tourism region "Sunnhordland", which also includes Austevoll. Kvinnherad is also member of Visit Hardanger, while Tysnes is also member of Visit Bergen.
Visit Voss	Voss	Covered by Statistics Norway's tourism region "Voss", which also includes Vaksdal
Municipalities without affiliation to a destination company	Askøy, Bjørnafjorden and Samnanger	Covered by Statistics Norway's tourism region "Bergen Region", which also includes municipalities in Visit Bergen

Bergen constitutes an urban destination, while Voss is the only inland region. The other regions are coastal and fjord regions attracting relatively many tourists (Sognefjorden and Hardanger) and not that many tourists (Sunnhordland, Fjordkysten and Sunnfjord and Nordfjord).

A.2 Industry Classification

In subsection 4.1, we provide a brief economic overview of the tourism industry in Vestland, based on material from Blumenthal et al. (2023) and Statistics Norway. In this regard, we have listed our operational definition of the tourism industry in Table 4.

Table 4: Operational definition of the tourism industry

Type of segment	Industry segment	Subsegment	NACE definition
Content services	**Accommodation services**	**Hotels**	55.101 and 55.102
		Camping, commercial cabins and hostels	55.201, 55.202, 55.301, 55.302 and 55.900
	Food and drink services	**Food-dominated services**	47.241, 56.101 and 56.102
		Drink-dominated services	56.301 and 56.309
	Experience services	**Active experience services**	49.393, 77.210, 79.902, 79.903. 91.040, 93.210, 93.291, 93.292 and 93.299
		Cultivated experience services	79.909, 90.040, 91.021, 91.022, 91.023, 91.029 and 91.030
	Tourist trade	**Tourism trade**	46.492, 47.722, 47.810, 47.820 and 47.890
Facilitation services	**Travel agencies**	**Travel agencies**	79.110, 79.120 and 79.901
	Passenger transportation	**Road passenger transportation**	49.311, 49.320, 49.391, 49.392, 52.214 and 77.110
		Railway passenger transportation	49.100 and 49.312
		Sea passenger transportation	50.101, 50.102, 50.109 and 50.300
		Air passenger transportation	51.100

B. APPENDIX: INTERVIEW GUIDANCE ON THE GREEN TRANSITION FOR TOURISM IN VESTLAND

We render the guidance on the tourism industry in Vestland during the green transition here.

B.1 Competitiveness of Tourism Industry

Tourism firms in Vestland experience a cost squeeze between international competition for tourists against countries with lower cost levels and local competition for production resources against highly productive industries. In the quality competition against foreign countries, the green quality aspect of the tourism products in Vestland is often highlighted.

- **Type of travelers:** Which target groups will your company or destination have in the future in terms of locals, visiting travelers with different nationalities and purposes, and throughout the season? What do you consider are the most important drivers for attracting customers to your firm or site today?
- **Attributes of tourism products and marketing:** How are aspects of nature and culture utilized in tourism products and marketing by the company or destination? How should these aspects be utilized?
- **Access to production resources:** How do you attract key inputs to production such as labor and capital to the local tourism firms? What is needed to raise the tourism companies' earning capacity and profitability?
- **Importance of the contextual environment:** Tourism is affected by a series of contextual conditions such as external marketing, infrastructure, tourism trends, trends in the sharing economy and exchange rates. Which factors do you consider as the most important for tourism firms, and how should the firms adapt?

B.2 Sustainable Nature Experiences at Destination Level

At the destination level, common good issues are linked to safeguarding nature, creating good infrastructure for experiencing nature and coordinating an overall commercial product offer. Tourism is facilitated through infrastructure such as roads, paths and signs, which firms individually typically do not have the incentive nor the ability to pay for.

- **Challenges related to the green shift:** What do you think are the main challenges for tourism industry in Vestland county in general and for your destination in particular in the meeting and adaption to the climate and nature crisis?

- **Management of public goods:** What are the most important natural values and sustainability challenges at your destination? To what extent is the nature at your destination managed well, and what could have been done better?
- **Infrastructure for experiencing nature:** Tourism uses several physical infrastructures in nature, such as roads, car parks, signage, toilets, hiking trails, viewpoints, and waste management. To what extent is the infrastructure sized for the use of tourists and locals? How should physical arrangements be facilitated for enhancing tourists' nature experience?
- **Solutions for organization and financing:** Tourism destinations' infrastructure and marketing can be financed and operated in several ways and by a number of different actors, including individual firms, formalized cooperative organizations, local authorities, public authorities, fundraising and tourists through user payment. Whose responsibility should it be to provide marketing services and tourist infrastructure for nature experiences? How could funding and infrastructure expansion be arranged?

B.3 Conflict Resolution between Industry and Nature

At societal level, there is a balance between economic activity and safeguarding nature, including consideration of biological diversity and landscape values, local environmental emissions and greenhouse gas emissions. Tourism products such as gondolas, ski resorts and holiday home areas are being developed, which can affect nature and outdoor life. Other businesses are also responsible for development in natural areas, for example users and builders of roads and wind power, which in turn can reduce natural values and experiences. Environmental and sustainability certification schemes are intended to support sustainable and environmentally friendly production and stimulate competitiveness.

- **Conflicts between tourism interests and natural values:** What specific conflicts of interest between tourism's use of nature and natural values are you aware of? How do you believe these conflicts should be handled?
- **Conflicts between tourism and other interventions in nature:** What specific conflicts of interest between tourism's use of nature on the one hand, and developments by other public and private industries on the other, are you aware of? How should these conflicts be handled?
- **Sustainability challenges in the tourism industry:** Tourism depends on a number of industries, including accommodation, food and drink services, experience services, trade, transportation, and construction of holiday homes. Which parts of tourism are subject to

the greatest sustainability challenges? What should the industry itself and the public sector do to adapt to climate change and sustainability challenges?

- **Environmental and sustainability certification:** To what extent do environmental and sustainability certification at company and destination level contribute to solving sustainability challenges of the society? How does certification affect the competitiveness of tourism?

B.4 Technological Possibilities and Solutions

New technologies for new opportunities for travel. The internet constantly provides new opportunities to reach customers and plan the journey, while travel mobile apps provide new opportunities to experience nature and culture at the destination. Furthermore, new digital meeting tools and better coverage facilitate better interaction with partners and remove some of the competitive disadvantages associated with long journeys. Digital tools also provide new possibilities for data management. In addition, technological framework conditions related to infrastructure and the sharing economy, among other things, play a role. It is reasonable to regard the features of technological developments in the context of the green transition.

- **Technology that enhances the tourism experience:** How do new technologies such as mobile apps and the internet of things create new opportunities for tourism firms, and how may these opportunities be exploited to promote sustainable competitiveness?
- **Digitization of the tourism firms' organizational work:** How do digital solutions for inter alia automatic adjustment of electricity consumption, data handling and communication contribute to the tourism companies' organizational work? What opportunities and challenges do you see in this regard?
- **Digital marketing and booking solutions:** How do the possibilities of digital marketing and digital booking systems affect the competitive situation of the tourism firms locally? How should the marketing of tourism destinations be carried out?
- **Technological surroundings:** The technological prerequisites of the tourism industry are affected by physical and digital infrastructure in the surroundings, for example linked to electronic communication and charging stations for electrical vehicles. The developments of such infrastructure are also linked to climate and local environmental obligations. How do you believe tourism in Vestland will be affected by the environmental obligations and technological development in the transportation supply in the years to come? To what extent is the physical and digital infrastructure sized well enough for the future?

C. APPENDIX: TEMATIC INTERVIEW SYSTEMATIZATION

In this appendix, we represent the thematic categorization of the interview responses.

C.1 Competitiveness of Tourism Industry

- Type of travelers:
    - Target groups
    - Season extension
    - Market strategy
- Attributes of tourism products and marketing:
    - Nature experience
    - Culture experience
- Access to production resources:
    - Access to labor and job attractiveness
    - Access to capital and profitability
- Importance of the contextual environment:
    - Adaptability to changes
    - International macroeconomics
    - Marketing and trends
    - Infrastructure and transportation
    - Public regulations

C.2 Sustainable Nature Experiences at Destination Level

- Challenges related to the green shift:
    - Regional challenges
    - Local challenges
- Management of public goods:
    - Important nature values
    - Good practices in tourism management
    - Issues in tourism management
- Infrastructure for experiencing nature:
    - Tourism infrastructure capacity
    - Managing visitors

- Solutions for organization and financing:
    - Responsible for organization
    - Financing solutions

C.3 Conflict Resolution between Industry and Nature

- Conflicts between tourism interests and natural values:
    - Example of conflicts between tourism interests and natural values
    - Strategies to solve conflicts between tourism interests and natural values
- Conflicts between tourism and other interventions in nature:
    - Example of conflicts between tourism and other interventions in nature
    - Strategies to solve conflicts between tourism and other interventions in nature
- Sustainability challenges in the tourism industry:
    - Most severe sustainability challenges
    - Solutions to reduce sustainability challenges
- Environmental and sustainability certification:
    - Benefits of certification
    - Issues with certification

C.4 Technological Possibilities and Solutions

- Technology that enhances the tourism experience:
    - Mobile applications and online experiences
    - Internet of things and technological equipment
- Digitization of the tourism firms' organizational work:
    - Digital communication technology
    - Automatic adjustment of electricity consumption
    - Digital management tools and data analysis
    - Data storage and cloud solutions
- Digital marketing and digital booking solutions:
    - Digital marketing
    - Digital booking solutions
- Technological surroundings:
    - Infrastructure for electronic communication
    - Infrastructure for electrical charging

This report discusses competitiveness, sustainability, conflict resolution, and technological integration under the green transition. The purpose is to enable tourism management in Vestland in correspondence with environmental and economic considerations and the evolving preferences of visitors. The primary method is interviews, supported by input from a reference group. We conducted 20 interviews with 22 informants from destination companies, tourism firms, and public and nature conservation interests, while the reference group included seven informants from five organizations.

Destinations in Vestland aim to attract high-paying tourists focusing on nature experiences and diverse tourism products. Competitive challenges include seasonal constraints, sustainability concerns, recruitment, funding, competition in the face of price pressures, and developments in circumstantial contexts. Respondents call for taking more advantage of nature in their marketing and a more complete product spectrum. Main sustainability challenges include dependence on carbon-intensive traveling from foreign markets and tourism crowding at specific locations, causing various environmental consequences. Stakeholders express a need for improved visitor management, potentially through the sustainable destination certification, which receives positive feedback. Conflicts between tourism interests and natural values in Vestland include the impact on vulnerable wild reindeer habitats, with ski resorts, gondolas and recreational homes encroaching on their territory. Cruise ship emissions and problems with the zero-emission requirement in world heritage fjords highlight the need for tourism management to consider all effects on markets and nature. Several respondents ask for more stakeholder involvement in energy project developments and land use conflicts to improve outcomes. Most respondents see benefits in various technological applications, including software, equipment, and digitalization of internal work processes, but they also bring coordination issues and frustrations with online travel agencies. They highlight the need for more coordination, cooperation, interactivity in digital presentation, and enhanced technological infrastructure, especially in electric charging facilities and electronic communication.

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