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Transitions toward mobilityefficient tourism destinations

Case studies from Scandinavia

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6 Transitions toward mobility-efficient tourism destinations

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Introduction

Each year, millions of tourists move through Scandinavian destinations ranging from small island nature-based tourism communities to large urban centers hosting major cultural and sports events and conventions. How these destinations manage the movement of visitors shapes their sustainability. Buses, ferries, bicycles, and private cars together form mobility systems that shape both environmental outcomes and local quality of life in these communities (Hibbert et al., 2013). Yet, many destinations struggle to balance accessibility with environmental and socio-cultural constraints: congestion, pollution, seasonal peaks, competing demands between local needs and tourism demands, and limited infrastructure (Hopkins, 2020; Larsen & Guiver, 2013). Against this backdrop, the notion of increasing the efficiency of mobility in tourism destinations highlights the growing need to design and manage mobility systems that enable smooth movement while minimizing environmental impacts and supporting local well-being, enhancing tourist experiences, and securing long-term benefits for communities and industries (Cavallaro et al., 2021).

The sustainability transition of location-specific mobility, such as within a tourism destination, entails a relative improvement in how people use the combination of all available transport options to travel within the geographical bounds of that area, while reducing negative impacts (Pineda et al., 2024). The definition of mobility used in this chapter is influenced by the understanding that components of a socio-technical system comprise three main dimensions: technology, actors, and institutions that serve a specific societal function (Geels, 2014). Examples can include introducing novel technology, such as electric buses, to reduce local emissions; new collaborations among local actors to improve coordination on local regulations that direct traffic flows more smoothly; or establishing new practices, such as car-sharing, based on a different set of values.

In tourism destination, the transition is inherently complex, shaped by varying mobility needs among residents and visitors, fluctuating demand, seasonal

variations, and differing infrastructural capabilities across locations (Park et al., 2023; Zamparini & Vergori, 2021; Zientara et al., 2024). Crucially, the features of destinations, including geographical location, distribution of tourism attractions, existing transport networks, and infrastructure, play a defining role in shaping both the meaning of efficiency and the direction of transition pathways for a mobility system.

For example, peripheral tourism destinations often face persistent issues related to limited accessibility, sparse infrastructure, and fragmented transport networks (Olsen et al., 2021). Island destinations face distinct challenges in managing seasonal peaks and mode dependency, often leading to increased private vehicle use and insufficient public transport options (Dickinson & Robbins, 2008). Urban event destinations, in contrast, must handle concentrated visitor flows in limited timeframes and spaces, often resulting in congestion, spatial pressure, and negative spillovers for residents (Mills & Rosentraub, 2013). In such contexts, high transport volumes may also disrupt urban land use and impact ecosystem services and community well-being (Nilsson & Johansson, 2021).

This chapter argues that spatial embeddedness shapes the type of system reconfiguration that emerges and the pathways available in local mobility systems as they seek to transition to more transport-efficient tourism across various destination contexts. A relational economic geography perspective, as articulated in the works of Hess (2004) and Bathelt and Glückler (2011), emphasizes that transitions are context-dependent and contingent on the interrelations among actors, institutions, and spatial conditions embedded in each destination. In tourism destinations, this means that the transition of local mobility systems is not simply the result of physical infrastructures but is deeply contingent on the embeddedness of actors within relational networks that mediate the flow of information, people, resources, and practices. Combining concepts from the field of transition studies with relational economic geography enables broadening the scope from individual actors that may contribute to a specific transition (often involving substituting one technology for another) toward the “relations and flows [...] rather than discrete entities” (Hansen & Coenen, 2015, p. 94) that drive a transition.

Following this line of thinking, this chapter examines how transport efficiency is produced relationally, through the interaction of spatial form in order to move toward transport-efficient tourism destinations. We draw on three Scandinavian case studies: (a) Lofoten, a peripheral destination in Northern Norway; (b) Malmö, an urban event destination in Southern Sweden; and (c) Bornholm, an island destination along the Danish coast. Our analysis builds on the theoretical concept of spatial embeddedness from a relational economic geography tradition and integrates it with the notion of system reconfiguration inspired by transition studies.

This chapter contributes to existing literature in three main ways. Firstly, building on transition studies supports a cleaner understanding of the entanglement of physical infrastructure and associated technologies that support a destination’s mobility system with actor constellations, their behavior, and local institutions. In combination with insights from relational economic geography, this will support understanding the spatial embeddedness of individual mobility systems in tourism

destinations. This helps answer calls for a deeper engagement with the interplay between physical infrastructure and socio-institutional dynamics (Stanford & Guiver, 2016; Sengers & Raven, 2015). Secondly, as Binz et al. (2025) recently underlined, both relational economic geography and transition studies are increasingly becoming interested in the question of how differences in structural preconditions of peripheral places could provide promising contexts for transformative changes that are less likely in settings where path dependencies are more articulated, with some even arguing that case studies of more peripheral locations, such as Bornholm, could act as an important counterweight to the great majority of studies that have focused on transitions in major urban centers (Hansen et al., 2024). Thirdly, this chapter contributes a multidimensional framework for analyzing mobility transitions that integrates physical, institutional, and behavioral dimensions. This responds to critiques of one-size-fits-all approaches and supports more tailored strategies for transition in tourism destinations (Tomej & Liburd, 2020; Zamparini & Vergori, 2021; Cabigiosu, 2025).

Literature review

Transition and mobility in tourism destinations

Transitions toward more sustainable mobility in tourism destinations are often connected to shifts in how specific technologies are used, such as enabling shifts toward car-sharing or pooling and mobility patterns (Signorile et al., 2018). Changes to the role individual technologies and infrastructure play in a tourism destination often also entail a transition in the way local actors approach transition management, the visions they can agree on, and how they govern local mobility practices (Scuttari et al., 2016). The management of mobility transition has also been linked to a need for governance structures that account for the need of co-evolution of different development trajectories in a tourism destination, such as political priorities, business interests, cultural norms, or industry dynamics (Scuttari & Isetti, 2019). Verbeek and Mommaas (2008) argue that, in order to attain a clear picture of the possibilities to transition toward “sustainable tourism mobility” (p. 640), a combination of actor-centric and structure-centric perspectives is required. They call for research that accounts for how a combination of technological and structural innovation and changes to individual behavior are possible in the context-specific setting of individual destinations, to avoid the often prevailing dualism between focusing on technologies that could contribute to the sustainability of tourism and the actor’s perspective of those using mobility services.

Transportation within tourism destinations constitutes a foundational pillar of the visitor experience, shaping both the accessibility of key attractions and the overall efficiency of movement across the place. According to Lew and McKercher (2006) and Stanford and Guiver (2016), the concept of transport efficiency in tourism is inherently context-dependent, taking on distinct forms according to local geographies, networks, and socio-economic systems. In this sense, transport efficiency is not a universal standard but a relational construct, emerging from the

interplay between destinations' unique characteristics and the strategies employed to facilitate tourist movement.

Transport-efficient destinations are defined not solely by the presence of advanced infrastructure, but by the appropriateness of transport systems relative to the needs and flows of tourism activities. For example, measures to reduce congestion, enhance connectivity, or optimize modal choices are shaped by both physical and cultural context (Tomej & Liburd, 2020; Yuan, 2025). The transition toward greater transport efficiency often entails the adoption of new strategies and perceptions of what constitutes "efficiency"—ranging from investments to the spatial reorganization of tourism nodes and attractions and behavioral changes in tourist movements.

Understanding transport thus requires an appreciation for the diverse types of tourism present within the destination, the specific activities tourists engage in, and the ways in which organizational and policy interventions attempt to bridge the gap between existing patterns and desired transitions in mobility. The spatial distribution of tourism elements, such as accommodations, attractions, and service points, fundamentally informs the design and perceived success of these measures.

Effectively connecting transport systems with urban destination attractions is a crucial element in creating a seamless and enjoyable tourism experience (Aranburu et al., 2016; Asero et al., 2016). However, optimizing this connection requires a nuanced appreciation of the diverse types of tourists frequenting a destination. Recognizing whether visitors are traveling individually, as part of organized groups, or as informed, independent explorers significantly impacts how transportation infrastructure should be designed and managed (Bauder & Freytag, 2015; Caldeira & Kastenholz, 2018).

For example, group travelers often require larger capacity vehicles and coordinated schedules, whereas individuals or small, informed parties may prefer flexible options such as bike rentals, public transit, or on-demand services. Furthermore, the duration of an average visit also plays a vital role (Pellegrini & Scagnolari, 2021): short-term visitors might prioritize speed and accessibility, while long-term tourists may seek affordability and immersive local experiences.

By understanding the composition and preferences of tourist types, destination planners can tailor transport solutions to maximize efficiency, reduce congestion, and enhance overall satisfaction. This targeted approach not only benefits the visitor but also supports sustainable development and the economic vitality of tourism regions.

Spatial embeddedness of mobility in tourism destinations

The effect of spatial embeddedness on transport and mobility is multifaceted, drawing from the disciplines of geography, planning, and tourism studies (Cidell et al., 2021; Scuttari, 2019). Spatial embeddedness refers to the degree to which destinations' characteristics, such as terrain, existing networks, cultural heritage sites, and economic nodes, shape and constrain both the development and functioning of transportation systems (Asero et al., 2016). These characteristics form the

underlying structure within which transport efficiency must be conceptualized and operationalized.

Key spatially embedded features include:

Spatial distribution of tourism elements: Tourism activities and attractions are rarely evenly distributed across a destination. The spatial clustering or dispersal of key elements—such as accommodations, attractions, and service hubs—shapes both the demand for transport and the feasibility of efficient mobility solutions. Concentrated clusters may allow for shared and public transport systems, while dispersed rural or nature-based tourism requires more tailored approaches (Tomej & Liburd, 2020).

Existing transport infrastructure and network: The pattern, capacity, and connectivity of transport infrastructures, such as roads, railways, ports, or cycling paths, play a decisive role in shaping accessibility and the potential for sustainable transitions. Densely connected areas may support multimodal solutions, while fragmented networks, especially in peripheral destinations, constrain modal shifts and increase dependency on private vehicles (Asero et al., 2016).

Geographical Location: Topographical conditions, whether mountainous, coastal, archipelagic, or flat urban plains, impose physical constraints on infrastructure development and influence the types of transport modes that are feasible or efficient. For instance, ferries may be essential in some locations, while others can support high-capacity ground transport. These features also shape how tourism activities are distributed spatially and seasonally. Whether a destination is insular, peripheral, or urban significantly affects its connectivity, dependency on external transport links, and exposure to seasonal demand peaks. Urban destinations face congestion and spatial constraints, while remote destinations often struggle with insufficient links and poor coordination between modes (Aranburu et al., 2016). These characteristics are not static; the transition involves ongoing adaptation and negotiation between the inherited spatial form and evolving tourism demands. From a sustainability transitions perspective, such changes involve more than technical upgrades—they require reconfiguring mobility systems to support decarbonization, modal shift, and inclusive access (Hansen & Coenen, 2015; Hopkins, 2020). Measures taken to improve transport efficiency, be they infrastructural, regulatory, or promotional, are thus embedded in, and often constrained by, the spatial realities of the destination (Sugimoto et al., 2019).

Case descriptions

Lofoten, Norway

With iconic mountains, fjords, and traditional fisheries settlements, Lofoten has become a world-famous destination, hosting around one million people yearly (Bogason et al., 2024). It is located above the Arctic Circle and can be approached by a road trip, cruise ship, plane, or bus tour. The coastal steamer (Hurtigruten) has been connecting the archipelago with the rest of the country since the end of the 19th century and is popular among tourists nowadays. The archipelago mainly

attracts visitors during the summer months, but Lofoten is becoming a year-round destination (Olsen et al., 2021). Around 25,000 people currently live in Lofoten, divided into six municipalities. Tourism has become the main economic activity in the archipelago since the 2000s.

Mobility within the destination

The public transportation options in Lofoten are designed to meet the needs of local population. Nordland County Council has a legal obligation only for one part of public transport system, the school transport, which is often decisive for the dimensioning of the public transport options. However, inter-municipal routes are also subsidized by the County (Olsen et al. 2021). School transport does not operate during the summer break, which is a peak of the tourism season in Lofoten. Moreover, most of the school bus routes do not offer transfer possibilities with other transport routes to travel further (Lebel et al., 2024). Private operators, such as Hurtigruten (boat) and Best Arctic (bus), operate a few routes that are open for the locals, although they are primarily designed for tourists and are characterized by long stops, lack of transfer possibility, and higher prices. Hence, there are capacity issues, as the public transportation options are not designed to meet the dramatic increase in passengers.

Key issues and opportunities

Transport is an important aspect in successful mobility and for spreading the flow of visitors around the archipelago throughout the year. The mobility is exposed to challenging weather conditions, landslide events in some areas, and limited road infrastructure. With an increasing number of visitors, the pressure on the transport infrastructure and services has increased, as they were not designed to handle such a volume of visitors. Capacity issues, traffic jams, and unorganized parking, but also overcrowded nature areas are common challenges that create frustrations among the inhabitants and disappointment among the tourists. Narrow roads, lack of sidewalks, parking spaces, and signs are examples of infrastructural challenges (Wigger & Olsen, 2024). In addition to this, a lack of coordination between the different routes encourages the use of private vehicles, which exacerbates the pressure on the road infrastructure and parking issues (Lebel et al., 2024).

Malmö, Sweden

Situated at the southern tip of Sweden, Malmö is a vibrant and rapidly evolving urban destination. As the country's third-largest city, Malmö is home to approximately 360,000 residents. Once a traditional industrial and shipbuilding city, Malmö has undergone significant transformation since the 1990s, shifting toward a knowledge-based economy and sustainable urban development (Anderson, 2014). In the aftermath of deindustrialization and municipal economic crisis in the 1980s and 1990s, the city adopted a redevelopment strategy that coupled ecological innovation with economic repositioning, including Flagship projects such as Bo01 (Western Harbour), the Turning Torso,

and Malmö Live (Holgersen & Malm, 2015). Its coastal location on the Öresund strait connects Malmö directly to Copenhagen, Denmark, via the iconic Öresund Bridge, positioning the city as a gateway between Sweden and the European continent.

Event tourism has played a particularly central role: from the Eurovision Song Contests (2013 and 2024) and Malmöfestivalen to design weeks, conferences, and international sport events. These events contribute to Malmö's visibility but also to seasonal surges in mobility demand, which place pressure on the city's infrastructure and urban rhythms (Kärholm, 2009). While Malmö is not a mass-tourism destination, its role as a short-stay, event-based, and business tourism node has become increasingly prominent (Haaland & Peterson, 2013), particularly through strategic cultural programming, sport events, and infrastructure investments.

Mobility within the destination

The city is compact, with most major attractions and other tourist sites accessible within a short distance, encouraging active forms of mobility such as walking and cycling. Public transport in Malmö is primarily organized around an efficient bus network and regional train connections. The city's modern buses, many of which are powered by renewable energy sources, offer frequent services connecting neighborhoods and key points of interest. Malmö Central Station serves as a major transport hub, linking urban and regional trains.

Malmö supports car-sharing programs and electric vehicle infrastructure, reflecting the city's broader goals for climate neutrality. The urban road network is well-maintained, yet car traffic is managed carefully to prioritize sustainable alternatives and minimize congestion, especially within the dense city center. During large-scale events such as the Eurovision Song Contest 2024, Malmö has implemented temporary mobility interventions, including pedestrianization of central streets, real-time traffic regulation (Markard et al., 2012), event shuttles, and free transit for accredited visitors. These interventions rely on the existing infrastructure but stretch the city's capacity to its limits during peak periods.

Key issues and opportunities

The influx of visitors, particularly during festivals, major events, and summer months, places pressure on transport infrastructure, with crowded buses and cycling paths at peak times. While Malmö's compactness enables efficient movement, the high volume of commuters and visitors traveling can lead to bottlenecks.

The transition to electric and low-emission transport modes presents further opportunities and hurdles. While Malmö's ambition to become climate-neutral by 2030 drives the expansion of charging infrastructure and the use of renewable energy in transport, the pace of change is constrained by funding, grid capacity, and questions about the accessibility and inclusivity of new technologies (City of Malmö, 2023). Emerging forms of shared mobility, such as electric scooters and car-pooling, offer promise but require careful regulation to ensure safety, minimize clutter, and integrate harmoniously into public spaces.

Collaborative governance is another essential issue. Malmö's mobility system is shaped by cooperation between municipal actors, private operators, and regional stakeholders, particularly given its cross-border context within the Öresund region (Anderson, 2014; Forslid, 2022). Sustainable solutions increasingly require alignment on policy, investment, and service design across both Swedish and Danish partners (Forslid, 2022).

Bornholm, Denmark

Bornholm has 40,000 inhabitants and faces unique mobility challenges due to its insular geography, aging population, and seasonal tourism dynamics. Situated in the Baltic Sea, east of mainland Denmark and south of Sweden, the island presents a unique geographical profile (Bornholm, n.d.). Bornholm's tourism history spans over a century, evolving from early leisure travel in the 19th century to a mature destination with a strong identity rooted in nature, culture, and community. The island's appeal has long been tied to its dramatic coastal landscapes, architecture, and artisanal traditions. Following the post-war reconstruction in the mid-20th century, Bornholm entered a phase of rapid tourism growth, reaching a stabilization stage in the 1960s and 1970s (Szromek, 2019). However, as tourism intensified, concerns about environmental degradation, seasonal pressure, and infrastructure strain began to surface. In response, Bornholm initiated a strategic shift toward sustainable tourism, aligning with broader Danish and EU goals for climate neutrality and responsible destination management (Destination Bornholm, 2024; European Commission, 2021).

The island receives up to 600,000 visitors annually, with tourism peaking during the summer months from June to August. This seasonal influx is driven by favorable weather conditions, cultural festivals, and the island's reputation for food and local crafts. Despite its peripheral position, Bornholm is accessible via multiple transport modes. Ferries operate from Ystad in Sweden, Køge in Denmark, and Sassnitz in Germany, while direct flights connect Copenhagen to Bornholm Airport near Rønne. These connections make the island reachable for both domestic and international travelers.

Mobility within the destination

Bornholm's transport system is designed to accommodate both residents and a high volume of seasonal tourists. Bornholms Amts Trafikselskab (BAT) provides hourly bus services across key routes such as Rønne–Nexø and Rønne–Gudhjem, with schedules coordinated with ferry arrivals. The island's cycling infrastructure includes over 230 km of signposted paths.

Key issues and opportunities

Bornholm benefits from a strong identity rooted in natural beauty, cultural heritage, and a tradition of community-based planning (Hartl & Rassing, 2002). However, the island also faces structural and environmental constraints that require careful navigation. Tourism remains highly concentrated in the summer months, leading

to underutilization of infrastructure during the off-season and overburdening during peak periods (Szromek, 2019). While Bornholm has made significant strides in sustainable mobility, its reliance on ferry and air connections makes it vulnerable to disruptions and limits accessibility for certain visitor segments, and an aging population and youth outmigration challenge the island's labor market and service provision, including in the tourism and transport sectors (Broegaard, 2022).

Nevertheless, Bornholm's commitment to becoming a carbon-neutral island by this year (2025) positions it as a leader in sustainable tourism, appealing to environmentally conscious travelers (Nordregio, 2019; Hansen et al., 2024), where cultural events, wellness tourism, and educational travel offer potential to extend the season and diversify the visitor base (Szromek, 2019).

Reflections across the cases and transition

Taken together, the cases of Lofoten, Malmö, and Bornholm illustrate how transport systems in tourism destinations are deeply shaped by their geographical embeddedness, seasonal dynamics, and governance arrangements. Each destination faces distinct mobility challenges—ranging from Lofoten's peripheral constraints and fragmented service networks, to Malmö's inner-city congestion, and Bornholm's infrastructural dependency and demographic imbalance. Yet across these differences, the three destinations are actively moving toward more sustainable mobility futures in their own way: electrification and modal shift, integrated transport planning, circular mobility experiments, and attempts to re-balance visitor flows across time and space.

These cases were selected not only for their diversity in spatial and institutional settings, but also because they represent archetypal contexts within which tourism and mobility transitions unfold. As such, they offer a grounded basis for the analytical and interpretive approach outlined in the following methods section, which aims to connect system-level ambitions with place-specific mobility practices and governance processes.

Methods

This study adopts a qualitative research approach to explore mobility in three Scandinavian tourism destinations: Lofoten, Norway; Malmö, Sweden; and Bornholm, Denmark. The research design is based on in-depth multiple case studies, which are conducted in independent research projects. The cases involved in the project have been purposefully selected to ensure a broad variety of geographical contexts and thereby enabling a comparative understanding of how contextual factors shape mobility and sustainability transition. Moreover, these cases represent varying stages of sustainable tourism development and different approaches to managing visitor flows, which strengthens the analytical potential for identifying transferable insights relevant across diverse tourism contexts.

Data collection was conducted within the framework of four larger research projects, each touching on sustainable mobility and tourism in Nordic contexts.

Table 6.1 Overview of the Research Projects

<i>Project Title</i>	<i>Main Theme</i>	<i>Geographical Scope</i>	<i>Data Collection Methods</i>	<i>Contribution to Current Study</i>
Assessment of the availability and need for mobility and transport solutions in Lofoten	Low-emission transportation, solutions	Lofoten, Norway	Desk study and workshop in 2023–2024, ($n = 6$). Conducted in Norwegian, translated to English.	The results relate to transportation needs, challenges and planning, and transition toward low emission alternatives.
Coordination of local and tourist-related transport needs	Coordination of the transportation needs, sustainable solutions	Lofoten, Norway	Desk study, expert workshops in 2021, follow-up ($n = 11$) interviews ($n = 5$). Conducted in Norwegian, translated to English.	Description of the transportation system in Lofoten and potential challenges for planning.
The future of the event and meeting industry in a transport-efficient society after COVID-19	Digitalization, sustainability, and transport of the future of the event industry in Sweden	Malmö, Sweden	Desk study, survey, informal interviews, interviews ($n = 31$, particularly relevant $n = 4$). Conducted in 2021–2025, both English and Swedish. The transcripts were prepared in English.	Results related to mobility in Malmö region are used for this book chapter.
Seasonal fluctuations in remote and rural tourism destination development	Renewable energy and engagement of place-based stakeholder perspective strategies	Bornholm, Denmark	Desk study and stakeholder workshop ($n = 12$). Conducted both in Danish and Swedish, and translated to English.	Description of the mobility system and potential challenges for planning. The results relate to transition toward low emission mobility alternatives.

Table 6.1 provides an overview and specifies the variations both in regard to the main themes, the geographical scope and data collected in the project. Overall, these projects provided a rich source of empirical material and enabled a comparative perspective across the selected destinations. While the projects in Lofoten and Bornholm specifically focus on mobility, the data from Malmö is derived from a project where mobility is a key concept beside sustainability in general and digitalization. Data collection occurred between 2021 and 2025. The projects in Malmö and Bornholm are currently ongoing, while those in Lofoten have been completed.

Primary data were collected through workshops and informal and semi-structured interviews with key stakeholders, including local authorities, transport providers, tourism operators, and community representatives. The workshops and interviews were conducted across the three destinations, ensuring a diversity of perspectives and experiences.

Seven workshops were conducted with Lofoten stakeholders: five workshops with inhabitants and two workshop with tourism actors. In Bornholm, one workshop was conducted with relevant stakeholders (19 participants) in addition to 12 semi-structured interviews with tourism actors. In the project including the Malmö case, 31 were conducted. Secondary data comprises policy documents, project reports, and relevant destination reports, accessed through desk-based research. This mixed-method approach combining desk research with stakeholder engagement allowed for a nuanced understanding of the local dynamics and challenges related to sustainable tourism and mobility.

The analytical process was guided by thematic analysis using deductive coding strategy (Fereday & Muir-Cochrane, 2006). Based on the initial understanding of the data and in combination with a literature review, a codebook was developed using a consensus-based approach (Saldaña, 2021). The research team conducted a review of the literature to identify and highlight key concepts relevant to sustainable mobility and tourism governance. These preliminary concepts formed the starting point for further discussions among the authors. Through a series of iterative and open-ended conversations, the team refined and expanded the codebook, ensuring that it captured both established themes and emergent issues observed in the data. The codebook uses the categories that form the structure of case description and findings.

All data were systematically coded using the agreed codebook, enabling consistent analysis across cases and data types. The coding process facilitated the identification of patterns, similarities, and differences in mobility governance and practices. The findings were subsequently synthesized to draw cross-case comparisons and highlight transferable lessons for sustainable tourism destinations.

Findings

In the following section, a detailed overview of spatial embeddedness characteristics and transition toward mobility efficiency in Lofoten, Malmö, and Bornholm are presented. The findings highlight how each destination navigates spatial characteristics and reveal destination-specific approaches for enhancing sustainable mobility. A summary of the key findings is presented in Table 6.2.

Table 6.2 Overview of Key Findings per Destination

	<i>Lofoten</i>	<i>Malmö</i>	<i>Bornholm</i>
Spatial embeddedness characteristics	-Transport system that combines different means of transport. Ticketing system and connection guarantee. -Sparsely populated islands and long distances between settlements and places of interest. -Focus of transport companies on tourism-related traffic (charter buses, excursion boat trips, cruise ships). -High reliance on private/rental vehicles among both locals and tourists. -Seasonality in transport operations.	-Strong connectivity between the key attractions and other tourism services. -Malmö is highly accessible through a well-integrated transport network combining rail, road, ferry, and air connections via nearby Copenhagen Airport, linked by the Öresund Bridge. -The city's relatively small and dense structure makes it easy to navigate on foot or by bicycle. -Malmö Central and peripheral station areas function as multimodal transfer hubs (train, regional rail, buses, long-distance coach, bikes). The city promotes bike-and-ride and coordinated timetables.	-Bornholm's remote location creates natural boundaries that limit direct land-based mobility. -Mobility is heavily dependent on maritime and air transport to mainland Denmark, Sweden, and Germany. -Connectivity fluctuates with tourism seasons, affecting frequency and capacity of transport services. -Thus, the island's size allows for relatively short travel distances, making active mobility (walking, cycling) feasible. -While Rønne is the main urban center, many residents live in smaller villages, requiring flexible transport options.
Transition toward transport efficiency	-Coordination of transport needs for locals and tourists. -Reduction of greenhouse gas emissions. -Dialogue between stakeholders (municipalities, business actors, county representatives) to coordinate local needs and adjust the transport offer. -Improvement of infrastructure capacity. -Safety measures are addressed in the National transport plan (St. Meld). -Coordination between transport services and establishing intermodal hubs.	-Malmö (municipality and individual tourism organizations) is actively prioritizing walking, cycling, and public transport in its urban and tourism planning. -Close collaboration between tourism stakeholders, public transport authorities, and the municipality to align mobility and destination development strategies. -The city increasingly integrates low-impact transport planning into event logistics, with event service providers discouraging high-emission travel and promoting collective transport solutions.	-Improve frequency, reliability, and coverage of buses, especially in rural areas and during off-peak seasons. -Develop seamless connections between ferry, bus, bike, and car-sharing services. -Involve local stakeholders in co-designing mobility solutions tailored to Bornholm's needs.

Insights from Lofoten

Spatial embeddedness characteristics

The completion of the Hålogaland road in 2007 with tunnels and bridges has connected the main islands of the Lofoten archipelago to the mainland, enabling driving all the way from the airport of Evenes (Harstad/Narvik) to Å i Lofoten (E10 road, 350 km). This road also enabled direct bus services without ferry transfers between Lofoten and Narvik. Travelers who want to favor low emission routes have thereby the possibility to reach Sweden by train from Narvik. In addition to these transport routes, several ferry and speed boat routes are operated to connect coastal communities. This results in a complex transport system, with different ticketing systems, and thus lack of connection guarantee to complete a journey combining several routes. Moreover, establishing an efficient transport system is challenged by the geography of the Lofoten archipelago, characterized by sparsely populated islands and long distances between the settlements and places of interest. All of this can explain the high reliance on private/rental vehicles among both locals and tourists. In the meantime, transport operators focus on the lucrative tourism industry by developing transport options targeting the tourists (charter buses, excursion boat trips, cruise ships), which does not meet the mobility needs of the locals and increases the seasonality of transport operations.

Transition toward transport efficiency

Debates related to transport efficiency engage many inhabitants, politicians, and industry representatives from the tourism and fisheries sectors as it is considered a major topic for the future of the archipelago. To cope with the challenges described above (see Case description), several ideas are considered relevant for Lofoten. The first one includes better coordination and shares of transportation for tourism and local purposes. There are already examples of how tourism-related transportation options were broadly used by the local population. The examples are facilitation of shared and soft mobility solutions (car-sharing and separate bike lanes for example) and the introduction of shuttle services (by boat and bus) to reduce the number of private vehicles, but also the use of electric buses, boats, and airplanes to cut further greenhouse gas emissions (e.g., Lebel et al. 2024). Still, new transport solutions based on electrification can cause indirect challenges for the local population due to the limited capacity of the local electricity network. Moreover, lack of local financial resources dedicated to coordination strategies and reduction of emissions entails that the further transport efficiency actions rely on close cooperation between the public and private sector and between the municipalities. Such cooperation also ensures integration of local infrastructural needs in the national policy plans. For example, a recent national transport plan prioritizes the maintenance and upgrade of a part of the European route E10 to ensure traffic safety in avalanche-prone areas (Transport, 2023–2024). These measures are also closely connected with the need to improve infrastructure capacity to ensure an efficient and safe flow of traffic. Still, such an approach should also focus on regulating

traffic volume, as opportunities to develop infrastructure without increasing pressure on the environment are limited, especially when it comes to roads and parking lots. Measures could, for example, focus on improving the infrastructure for soft mobility (bike lanes, pedestrian paths, lighting, safe crossings of E10) and facilitating the use of public transport (bus stops with signs and shelters; short distances with safe paths between bus, ferry, and speedboat stops; and easier access to the local airports). These actions would require both establishing intermodal hubs and coordinating better the schedules of the transport service with each other, which would facilitate the use of an integrated transport system for both the locals and the tourists.

Insights from Malmö

Spatial embeddedness characteristics

Malmö's spatial structure is characterized by compactness, multimodal accessibility, and strong cross-border connectivity. As Sweden's third-largest city, it occupies a strategic position at the southern tip of the country, forming part of the transnational Öresund metropolitan area together with Copenhagen. The Öresund Bridge functions as both a symbolic and physical link, facilitating easy access by train and car between Denmark and Sweden.

The spatial distribution of tourism elements reflects Malmö's urban design. Most cultural attractions, parks, waterfront areas, and event venues are concentrated within or close to the city center, reducing the need for long-distance travel within the destination. The flat topography makes the city highly walkable and ideal for cycling, which has become a defining characteristic of both local mobility and tourist experience. A well-developed cycling network connects major attractions such as Västra Hamnen, Ribersborg beach, and the historical city center, allowing visitors to move efficiently while engaging with the city's sustainable identity. The city's planning has prioritized non-motorized mobility and public transport efficiency over car-centric development. This alignment between local and visitor mobility needs creates synergies that support transport-efficient tourism rather than competition for infrastructure use.

Malmö's transport-related infrastructure is closely tied to its role as a regional node. The central station connects local, regional, and international train lines. The public transport system, coordinated by one key operator, Skånetrafiken, provides integrated ticketing and scheduling for buses and trains, improving accessibility for both residents and visitors. Ferry connections to Germany and Poland further extend the city's reach to the European mainland.

Transition toward transport efficiency

Malmö's transition toward a transport-efficient tourism destination is guided by long-term strategies integrating urban sustainability, climate goals, and mobility planning. Malmö signed the climate contract and related municipal mobility

strategies emphasize reducing greenhouse gas emissions from transport, improving accessibility, and promoting behavioral change toward active and collective modes of travel. Malmö has been a high-profile participant in international urban sustainability discourses. It has received numerous awards for its environmental and climate policies and is frequently cited as a model for climate-forward, compact urban development (Holgersen & Malm, 2015). The redevelopment of Västra Hamnen (Western Harbour) and the ongoing Varvsstaden project have been used as examples of Malmö's commitment to low-carbon urban design, walkability, and sustainable mobility (Gehlpeople.com, 2025; Stenberg & Hansson, 2025; Wingårdh Arkitektkontor AB, 2024).

Tourism in Malmö is concentrated in these redeveloped areas as well as the inner city, and overlaps significantly with infrastructure and spaces used by residents. A core element of this transition is the shift to sustainable mobility modes, evident in the prioritization of cycling and walking in both everyday life and tourist experiences. The expansion of safe bike lanes, public bike-sharing systems, and pedestrian-friendly urban design has significantly lowered the need for car-based movement within the city. Extensive investments over the past decades have resulted in one of Europe's most comprehensive cycling networks with over 500 km of dedicated bike lanes spanning the city (Cykelfrämjandet, 2023), supported by bike-sharing schemes and secure parking facilities. Cycling constitutes a significant mode of transport for residents and visitors alike, contributing to Malmö's reputation as a leading cycling city.

Close collaboration between tourism organizations, public transport authorities, and the municipality ensures coherence between destination development and transport planning. This governance model supports integrated decision-making where tourism growth aligns with low-emission mobility goals. Malmö also encourages smart mobility solutions, such as digital platforms for trip planning, real-time public transport information, and shared mobility services (e-scooters and car-sharing), helping both locals and visitors make efficient travel choices.

Insights from Bornholm

Spatial embeddedness characteristics

Bornholm's transport system is shaped by its reliance on ferry and air connections, particularly the Rønne–Ystad and Rønne–Køge routes. These connections are vulnerable to weather disruptions and capacity constraints, especially during peak summer months when utilization rates on the Rønne–Ystad route have exceeded 90% (Trafikstyrelsen, 2023). Public transport on the island, operated by BAT, remains limited in coverage and frequency, particularly in rural areas. Although bus schedules are coordinated with ferry arrivals and departures, service levels outside Rønne and during off-peak seasons are insufficient to meet the needs of residents and visitors alike (Bornholm Regionskommune, 2023). The lack of rail infrastructure and the high reliance on private vehicles contribute to uneven accessibility and increased carbon emissions.

Seasonal fluctuations in tourism further complicate mobility planning. During summer, Bornholm experiences a surge in visitors, which places significant pressure on its transport infrastructure. This leads to congestion, environmental strain, and logistical challenges in managing visitor flows. Conversely, in winter, reduced transport services limit accessibility and economic activity, particularly for residents in remote areas (Szromek, 2019).

In response to these challenges, Bornholm has adopted a series of strategic initiatives aimed at enhancing mobility efficiency and sustainability. Central to these efforts is the “Bright Green Island” vision, which seeks to make Bornholm carbon-neutral in energy production by 2025 and fossil-free by 2040 (Nordregio, 2019). This includes integrating renewable energy into transport systems, expanding electric vehicle infrastructure, and promoting active mobility through cycling and walking paths. Governance plays a crucial role in Bornholm’s mobility transformation. Destination Bornholm, Bornholm Regionskommune, and various civil society actors collaborate to align transport planning with tourism development and community needs. This embedded governance structure enables adaptive and participatory planning, ensuring that mobility strategies are responsive to local conditions and values (Hansen, 2024).

In Bornholm’s case, efficiency must be understood in relation to modal performance (e.g., emissions per passenger-kilometer), seasonal adaptability (e.g., ferry capacity during tourism peaks), accessibility equity (e.g., services for elderly and rural populations), system resilience (e.g., redundancy in transport links). These dimensions are embedded in Bornholm’s socio-spatial context and require integrated planning across maritime, land-based, and digital infrastructures.

Public transport on the island is limited, with only 11 bus lines operated by BAT and a high reliance on private cars. The average cost per passenger on the Rønne–Ystad ferry route is significantly higher than comparable mainland routes. In 2022, average occupancy on the Rønne–Køge ferry was only 52%, with peaks exceeding 90% during summer.

The Bornholmeranalysen (Trafikstyrelsen, 2023) projects a 5–8% increase in car traffic by 2040. A flexible fare structure is proposed to manage demand and improve load balancing. Real-time data integration and booking platforms are expected to reduce waiting times and improve service coordination. These measures reflect a shift toward scale efficiency and network optimization, where larger and smarter systems reduce per capita resource consumption.

Transition toward transport efficiency

Island destinations face unique mobility challenges. These conditions create a distinct form of spatial embeddedness, where mobility systems are deeply influenced by local socio-spatial realities. Understanding how islands transition toward transport-mobility-efficient tourism requires a synthesis of research on shared mobility, accessibility, governance, and sustainability in insular contexts. Spatial embeddedness in island mobility refers to the interplay between physical geography, institutional arrangements, and community practices. Tomej and Liburd

(2020) argue that rural and island destinations require place-based transport planning that accounts for fragmented networks and uneven accessibility. This embeddedness often results in transport poverty, especially among elderly residents and low-income groups, and limits the scalability of conventional mobility solutions.

Public investment in green infrastructure and digital mobility services, dynamic pricing models to manage seasonal demand and improve capacity utilization, enhanced regional governance, including Bornholm's active role in ferry contract management and mobility coordination and local stakeholder engagement with transport operators, municipalities, and civil society. However, Bornholm also offers distinct opportunities due to strong natural amenities and cultural identity, increasing digital infrastructure supporting remote work and civic engagement through active local communities.

Discussion

The relational nature of transport efficiency means that what is regarded as efficient in one context may not be in another (Hansen & Coenen, 2015). Compact urban environments may emphasize pedestrian networks and bike lanes, while rural or dispersed regions often rely on flexible bus systems. This echoes findings in tourism and transport geography, showing how spatial form and infrastructural capacity shape the feasibility of different mobility modes (Asero et al., 2016; Bauder & Freytag, 2015). As our findings show, place-based conditions shape which forms of mobility transformation are feasible, desirable, and politically legitimate in tourism destinations, reinforcing calls to treat transition pathways as geographically differentiated rather than universal (Levin-Keitel et al., 2018; Magnusson et al., 2024).

Geography and settlement structures further define the spatial limits of transformation (Levin-Keitel et al., 2018; Hansen & Coenen, 2015). Bornholm's compact island geography and short intra-island distances create favorable conditions for active mobility and multimodal integration, making cycling and public transport viable for both residents and tourists. In contrast, Lofoten's dispersed archipelago and long travel distances between settlements constrain public transport provision and increase dependence on private or rental vehicles (Wigger & Olsen, 2024). Malmö, situated within a dense metropolitan region and supported by advanced transport infrastructure, operates within a different spatial logic that enables high-capacity shared mobility systems and integration across transport modes (Anderson, 2014; Kärholm, 2009).

Taken together, these contrasting spatial configurations demonstrate that transport efficiency is relational to spatial form and institutional context (Cresswell, 2010; Magnusson et al., 2024). Rather than assuming a single optimal model, "efficient" outcomes emerge through the interaction of infrastructure, governance priorities, and tourism rhythms and behavior, and must therefore be assessed in context. This perspective also foregrounds the distributive dimension of transition—who benefits from efficiency gains, who bears the costs, and how legitimacy around mobility change is constructed (Magnusson et al., 2024; Persson-Fischier et al., 2025).

The comparison of Bornholm, Lofoten, and Malmö also reveals both shared challenges and divergent pathways shaped by their spatial embeddedness (Levin-Keitel et al., 2018; Hansen & Coenen, 2015). The three case destinations face the imperative to reduce the impacts of car dependency, enhance accessibility, and align mobility systems with sustainability goals. However, their approaches differ significantly due to variations in geography, governance capacity, infrastructure maturity, and tourism dynamics (Coenen et al., 2012; Coenen & Truffer, 2012). Bornholm and Lofoten, as peripheral and rural destinations, require context-sensitive solutions that prioritize flexibility, community engagement, and low-carbon transport modes. Malmö, by contrast, benefits from urban density and institutional capacity, allowing for more technologically advanced and integrated mobility systems. Yet, the three cases demonstrate that successful transitions depend not only on infrastructure and technology, but also on the ability to embed mobility innovations within local social and cultural frameworks (Cresswell, 2010; Sheller & Urry, 2006).

The cases show that spatial embeddedness shapes not only the constraints of tourism mobility, but also the meaning of “efficiency” and the transition strategies that become politically and operationally viable. In Malmö, efficiency is largely pursued through integration, capacity, and coordinated multimodal systems, whereas Bornholm and Lofoten illustrate transition logics where efficiency is more closely associated with resilience, flexibility, and inclusivity under conditions of insularity, dispersion, and seasonality. This supports a relational understanding of mobility efficiency that challenges linear and technocratic assumptions about mobility transitions and instead foregrounds geographically differentiated pathways (Hansen & Coenen, 2015; Levin-Keitel et al., 2018; Magnusson et al., 2024).

An implication is that embedding mobility requires innovations within local social and cultural frameworks, which should align new transport solutions with everyday mobility patterns, values, and governance traditions (Sheller & Urry, 2006; Cresswell, 2010). In Lofoten, this involves adapting services to dispersed settlement structures and seasonal tourism flows. On Bornholm, innovations such as cycling promotion and integrated public transport resonate with long-standing community planning practices and environmental identity. In Malmö, shared mobility and electrification succeed when embedded in digitally connected neighborhoods and supported by long-term policy continuity. Across all three destinations, innovation gains traction not only through infrastructure but through responsiveness to local ways of moving and living (Hansen & Coenen, 2015).

Importantly, socio-economic embeddedness is not just a background condition—it actively shapes the scope, pace, and direction of mobility transitions. On Bornholm, a declining year-round population constrains the institutional and financial capacity needed to maintain public transport beyond the tourism season, despite a strong political ambition for low-emission mobility. In Lofoten, limited coordination capacity across fragmented municipalities, combined with a tourism-dependent economy, hinders the strategic design and implementation of system-wide mobility solutions. In contrast, Malmö’s stable population base, policy coherence, and digital infrastructure facilitate its ambitious smart mobility transitions that align tourism with broader sustainability goals. These contrasts underscore that transitions

are shaped not only by available resources, but by the spatial and institutional context in which planning and investment decisions unfold. Demographic resilience, governance scale, and economic structure, therefore, facilitate not just what is possible, but what is prioritized in transport transition strategies (Hansen & Coenen, 2015; Hassink et al., 2019).

In addition to these capacity constraints, transitions in tourism mobility are not merely technical or policy-led, but assembled through negotiated coordination among interdependent actors. In Malmö, institutional coherence across transport, planning, and tourism sectors facilitates shared investment and co-aligned mobility strategies. In contrast, Lofoten illustrates how fragmented municipal structures, high infrastructure costs, and unclear jurisdictional boundaries limit the formation of stable transition coalitions. Bornholm presents a middle ground, where a legacy of community-based planning supports collaboration, but limited vertical integration with national transport systems constrains broader change. These cases show that the success of low-carbon mobility transitions depends not only on funding or infrastructure, but on the ability of actors to align strategies, share resources, and maintain governance continuity over time—a relational process embedded in place-specific institutional arrangements (Hess, 2004; Bathelt & Glückler, 2011; Hansen & Coenen, 2015).

Geographically embedded contexts highlight how tourism growth and mobility planning often evolve along misaligned trajectories (Levin-Keitel et al., 2018). In Lofoten, the expansion of tourism demand, particularly during the summer months, outpaces the seasonal rhythms of public transport provision, which remains structured around school-year priorities. Bornholm, while more advanced in multimodal planning, continues to rely on long-distance transport connections (e.g., ferries and flights) whose decarbonization lags behind local sustainability efforts. Malmö illustrates a more coherent temporal alignment, where smart mobility initiatives and tourism planning are coordinated through long-term strategies that embed flexibility and real-time response. These patterns illustrate that mobility transitions are not just spatially differentiated but temporally layered, shaped by the co-evolution of infrastructure, governance, and tourism demand (Levin-Keitel et al., 2018; Magnusson et al., 2024).

Building on the spatial contrasts above, the alignment between tourism demand and transport provision depends on whether attractions and services are clustered or dispersed. Clustered urban destinations such as Malmö can support high-capacity collective transport, while dispersed destinations such as Lofoten tend to rely on small-scale modes, increasing carbon intensity and operational complication (Cavallaro et al., 2021; Scuttari et al., 2016). Bornholm illustrates an intermediary position: its compact geography enables coordinated planning and multimodal solutions, yet its insular status creates dependencies on external transport links and long-distance visitor access.

At a broader level, the direction and pace of transition are shaped through socio-economic and institutional negotiations (Hansen & Coenen, 2015; Hassink et al., 2019). Demographic structures, governance capacity, and tourism's economic role jointly condition the feasibility of low-carbon transport transformations. Peripheral destinations often face structural dependencies and resource

constraints that limit their ability to sustain year-round, collective mobility systems. Conversely, metropolitan regions benefit from institutional coherence and technological infrastructure that facilitate integrated transition pathways. Understanding mobility transitions through the lens of spatial embeddedness also underscores the co-evolution between tourism demand and transport provision (Cresswell, 2010). Thus, transitions toward transport-efficient tourism require an alignment between spatial form, governance arrangements, and evolving patterns of tourist mobility, pointing to the need for place-based strategies that combine decarbonization goals with service designs tailored to local spatial form and tourism rhythms.

Conclusion

In this chapter, we examined the interplay between mobility and spatial embeddedness as a central lens for understanding how tourism destinations move toward transport efficiency. The analysis demonstrates that “efficiency” cannot be treated as a universal benchmark; rather, it is produced relationally through the interaction of spatial form, infrastructural and institutional capacity, and the temporal rhythms of tourism. An adequate analytical framework must therefore attend to the context-specific spatial characteristics and the multiple forms of mobility that arise within it, recognizing transition as an iterative and negotiated process (Hansen & Coenen, 2015; Levin-Keitel et al., 2018; Magnusson et al., 2024).

Synthesizing the three cases highlights that transport-efficient tourism transitions require place-based strategies responsive to distinct destination logics (Hansen & Coenen, 2015). Urban destinations such as Malmö can draw on density, multimodal integration, and institutional capacity to pursue coordinated and technologically advanced mobility systems. Peripheral and insular destinations such as Lofoten and Bornholm, by contrast, face constraints linked to dispersion, seasonality, and reliance on long-distance access, which make flexibility and resilience central to transition strategies. Across all contexts, the most robust pathways are those that align transport provision with tourism demand while also supporting residents’ everyday mobility and local acceptance, rather than treating visitor mobility as a separate or exceptional system (Sheller & Urry, 2006; Magnusson et al., 2024).

Transformative innovation policy implications

The findings imply that moving toward transport-efficient tourism cannot emerge or stabilize as a stand-alone transition but must be embedded within a broader national transformative innovation policy (TIP) framework. From this perspective, TIP should not be confined to selectively defined sectors such as transport or energy, but explicitly address interdependencies between industries, including tourism that strongly influence mobility patterns, energy use, and infrastructure demand (Schot & Steinmueller, 2018). Designing TIP in this way requires policy frameworks that are sufficiently broad and flexible to accommodate spatial embeddedness, such as topography, insularity, and settlement patterns as well as temporal dynamics related to seasonality, events, and fluctuating visitor demand.

Accordingly, effective policy mixes need to combine infrastructure investments with regulatory capacity, public procurement, and institutional support for cross-sector collaboration and iterative adjustment over time, supported by formative monitoring and learning approaches rather than end-of-cycle evaluation alone (Haddad et al., 2022). This is particularly important in peripheral and insular destinations, where local resources are limited and where national and regional frameworks shape the feasibility of electrification, public transport provision, grid upgrades, and long-distance access (Hansen & Coenen, 2015). Evaluation criteria should therefore move beyond narrow operational indicators to include transformative outcomes such as accessibility, distributional effects, legitimacy, and second-order learning, recognizing that transitions can stall when new technologies or services are experienced as uneven, exclusionary, or poorly aligned with local needs (Ghosh et al., 2025).

Managerial and destination governance implications

For destination managers, municipal actors, and tourism businesses, this chapter underscores that mobility cannot be treated as a background service: it is part of the destination experience and an important condition for both visitor satisfaction and local well-being. In practice, this implies strengthening durable partnerships between tourism organizations, transport operators, and planning authorities; coordinating visitor communication and real-time information; and designing tourism products that support low-carbon mobility choices through integrated guidance, service coordination, and mobility-inclusive itineraries (Hopkins, 2020; Signorile et al., 2018). For destinations shaped by events and temporal peaks, mobility planning should be institutionalized as part of event governance, combining temporary measures (routing, pedestrianization, shuttles, demand management) with clear communication and coordination routines that reduce friction for residents and visitors (Stanford & Guiver, 2016). In peripheral destinations, managerial action is critical in building “bridges” between dispersed attractions and limited public transport provision, for example, through bundled mobility offers, partnerships with service providers, and coordination across municipalities to reduce fragmentation in service design and visitor information.

Implications for tourism development

More broadly, the analysis shows that mobility transitions shape tourism development trajectories by influencing accessibility, spatial distribution of visitor flows, and the social license for tourism growth. Transport-efficient tourism is therefore closely connected to how destinations manage seasonality, congestion, and the everyday impacts of visitor mobility on residents. From this perspective, mobility is also an experience-making component of tourism that affects what visitors can access, how they move through the destination, and how they perceive the destination’s coherence, livability, and sustainability profile (Sheller & Urry, 2006; Cresswell, 2010; Scuttari, 2019). Destinations that make low-carbon mobility legible,

attractive, and convenient may strengthen long-term resilience and competitiveness, while destinations that fail to integrate tourism and mobility planning risk reinforcing car dependence, crowding, and local tensions.

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