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ICE-BREAKING TOURISM AND LOCAL RESILIENCE BUILDING

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This study focuses on local ice-breaking tourism initiatives in Kemi (Finland), Mombetsu (Japan), and Abashiri (Japan). It adds to research on winter and cruise tourism and analyzes multiscalar challenges—ranging from the global warming and COVID-19 pandemic to dependency on local governmental support—threatening the future of tourism dependent on frozen maritime conditions and vulnerable to changing climate conditions. As the case study cities have invested significantly in tourism built around the uncontrollable natural phenomenon, changes in this industry can lead to substantial spillover effects in the surrounding communities. This qualitative comparative research is based on extensive fieldwork and utilizes the concept of resilience to discuss the means of responding to existing and predicted disturbances. The results of this study show that the recent adaptation and resiliency-building strategies have focused on searching for alternative use of old, new, and renovated ice-breaking vessels, attraction of new types of (often domestic) visitors, and development of activities and facilities that are less sensitive to seasonal variation and climate change. While introducing new local ideas concerning ecological and educational tourism, e-tourism, and community-oriented tourism, this article contributes to the understanding of resilience-building processes in tourism.

Key words: Icebreaker; Tourism; Resilience; Finland; Hokkaido

Introduction

Winter tourism is faced with challenges that require resilience building. The global unsustainable use of natural resources has accelerated climate change, which results in local loss of ice and snow in different parts of the Northern Hemisphere. This

affects the everyday lives of local coastal communities as well as the services for visiting tourists (Scott et al., 2012). Ice-breaking tourism is a form of winter tourism that is dependent on frozen maritime conditions and vulnerable to changing climate conditions (see Tervo-Kankare, 2012). At the same time, it is a part of the cruise industry, which

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has various economic, sociocultural, and environmental implications (Brida & Zabata, 2010). The need for studies focusing on the cruise industry is derived from the hopes that it could provide economic benefits to destinations and local people involved in tourism operations (Fridriksson et al., 2020; Naylor et al., 2021). Furthermore, according to Steiger et al. (2021), the existing research on winter tourism focuses heavily on skiing tourism and global overviews but lacks regional assessments. This study provides a novel approach and a new type of a case for analyzing the relationship between climate change and winter tourism. It contributes to the needs to understand the local impact of cruise tourism and the ways for building resilience in times of change. The study examines the relationship between coastal ice-breaking tourism and global changes and pressures ranging from climate change to the COVID-19 pandemic. Hence, the study contributes to multiscale tourism research where different levels of operation are understood to be deeply connected (see Prayag, 2020).

This article examines ice-breaking tourism where cruises typically last a few hours and are operated locally. The cruises clearly differ from longer Arctic exploratory cruises that are often provided by international cruise companies, take longer routes, stop in multiple destinations, and are governed by international maritime conventions (see Paskevich et al., 2015). By redirecting scholarly attention from large-scale cruise ships to smaller-scale ones, this study highlights the understudied local strategies by coastal communities to manage the changes and pressures of locally operated winter cruise tourism. Here, the concept of resilience is used to discuss the means of responding to disturbances and seeking new solutions (see Lew et al., 2016; Prayag, 2020; Saarinen & Gill, 2019; Vale, 2014). In this way, the study fills a gap in tourism resilience research by examining tourism-dependent communities, their vulnerability and diversification pathways (Prayag, 2020) to better cope with change. To understand such changes and resilience-building processes in terms of winter cruise tourism and local management strategies, empirical insights are drawn from northern Finland and Hokkaido—the northernmost prefecture of Japan that has long been identified as

a part of the global north, characterized by its cold climate and harsh winters despite not being part of the Arctic (Babin & Saunavaara, 2023)—where ice-breaking tourism has been developed in recent decades.

The data for the comparative analysis are based on fieldwork in Kemi, Mombetsu, and Abashiri. Despite certain differences in climate, natural environment, vessels, and other infrastructure, ice-breaking tourism in these three places provides similar experiences to visiting tourists. None of these relatively small northern cities have been traditional tourism destinations and icebreakers have been central to the establishment of tourism in these cities. By chance, this study has many similarities with a recently published article by Naylor et al. (2021), which underlines the timeliness of studying community resilience in coastal tourism. The findings made in Finland and Japan are also reflected against the conclusions drawn in a case study by Naylor et al. in Southeast Alaska.

The goal is to discuss the resilience of ice-breaking tourism by exploring the development paths that have led to contemporary activities, as well as to identify ways to build future resilience in the changing circumstances around winter cruise tourism. This article aims to understand local strategies that have been used to manage undesirable conditions in the past by turning them into a strength through cruise tourism, and to explore the strategies suggested today for building resilience in vulnerable ice-breaking tourism destinations. This is done by analyzing how tourism has emerged in Kemi, Mombetsu, and Abashiri, what kinds of strategies local tourism stakeholders have used to manage the changes in and through tourism, and how they envision the future of tourism.

This study consists of six parts. The introduction is followed by a theoretical and conceptual framework that focuses on ice-breaking tourism and climatic conditions in relation to local strategies for managing change and building resilience. The third part introduces the methodology used to analyze the multidimensional phenomenon, followed by a section describing the origin, development, and current pressures on ice-breaking tourism in the three case study cities. The fifth section focuses on future-oriented local resilience-building processes and is followed by a discussion.

Icebreaker Tourism and Resilience

Navigating in Changing Conditions

The cruise industry has been noted as a rapidly growing (Peručić, 2019) and a potentially exploitive form of tourism for coastal communities (Naylor et al., 2021). Fridriksson et al. (2020) suggested that cruise tourism is a key contributor to overtourism with varying economic gains, environmental costs, and social consequences. In general, tourism is linked to questions of sustainability through the multiscale environmental and sociocultural changes it creates and contributes to (Higgins-Desbiolles, 2018; Higgins-Desbiolles et al., 2019; Saarinen, 2019; Scott et al., 2012). This has created the need to enhance the sustainability of tourism. Sustainable tourism can be conceptualized as a tourism system that does not aggregate quantitative growth but rather “encourages qualitative development, with a focus on quality of life and well-being measures” (Hall et al., 2015, p. 1). While tourism can be seen as a challenge to sustainability, it can be a way to enhance sustainable development by bringing well-being, vitality, and employment to local communities for example (Saarinen, 2019). Tourism is also vulnerable to issues such as “climate change, disasters, depopulation, and market fluctuation” (Sakuma, 2019, p. 171), which has a direct impact on communities whose livelihoods are dependent on tourism. This is also the case for local communities that operate cruise tourism.

While the cruise industry is growing, there are various scales of cruise tourism. Cruises can range from small, locally owned ships operating in the coastal areas of destinations to large international cruise companies arranging tours from one destination to another. Despite its form, the future of cruise tourism and its sustainability in the Northern Hemisphere is complicated. Nature-based winter tourism is especially vulnerable to changing climatic conditions (Tervo-Kankare, 2012). The pressures linked to climate change as well as wider socioeconomic challenges to tourism such as the COVID-19 pandemic (Duro et al., 2022) require the tourism industry to rethink its logic and ways to operate on multiple levels.

In this article, these processes are discussed through the concept of resilience, which refers to ways of conceptualizing responses to disturbance (Vale, 2014). Resilience building includes adaptation and learning. This requires both an

understanding of changing circumstances and the flexibility, creativity, and innovation to find new openings. In other words, in resilient destinations and organizations, shocks and crisis can trigger transformations and improvements (bouncing forward) rather than the simple return to the predisturbance situation (bouncing back) (Lew et al., 2016; Prayag, 2020).

As Prayag noted (2020), tourism operates on multiple scales ranging from macro (tourism system, destinations, and tourism dependent communities), meso (tourism organizations and networks), and micro (residents, tourism workers, tourists) levels. Vale (2014) similarly described that “socio-environmental resilience can be conceived and practiced at a variety of scales and configurations” (p. 191), ranging from communities to multinational regions. At the microlevel, different groups’ resilience is tangled to movements on meso- and macro-levels. Disturbances like the COVID-19 pandemic reveal communities’ vulnerabilities and dependency on multiscale changes in global tourism, and challenge them to reassess the overall resilience of the socioecological system (Prayag, 2020). Resilience-building initiatives can, for example, enhance local communities’ well-being by diversifying livelihood structures and bringing highly needed jobs, activities, and vitality to sparsely populated areas (see Saarinen, 2019; Shekari et al., 2022).

Resilience can be viewed as a potential action-oriented, adaptive, and achievable way to enhance sustainability (Dredge, 2019; Saarinen & Gill, 2019). At the same time, even though destinations can devise local management strategies for building resilience against climate change and other challenges, mitigating the overall climate change is the key to long-term sustainability (see Tervo-Kankare et al., 2018). In this sense, it has been noted that resilient tourism destinations do not automatically contribute to enhancing sustainability in general (Dredge, 2019; Saarinen & Gill, 2019). Therefore, it is central to ask whose resilience is being built and what kind of resilience is being developed (Vale, 2014).

Flagships of Local Tourism Development

In Kemi, Mombetsu, and Abashiri (see Fig. 1), tourism (especially ice-breaking tourism) has been



Figure 1. Case study cities: Kemi, Mombetsu, and Abashiri.

used as a strategy to manage local conditions and challenges, such as the need for more diverse livelihoods, mitigating out-migration, and fostering employment and vitality. The icebreaker *Sampo* in Kemi is a full-scale (albeit aged) icebreaker capable of breaking solid sea ice. The vessels used in Mombetsu (*Garinko II* and *III*) and Abashiri (*Aurora* and *Aurora II*) are smaller ice-strengthened ships designed to operate on drifting ice and are capable of only breaking thin sea ice. Despite these slight differences, the tourist experience of being at sea in a vessel surrounded by sea ice is similar. Furthermore, local ownership, management, and operational planning are typical features for all cases studied. The basic approach behind ice-breaking tourism in Bothnian Bay and the Sea of Okhotsk, carried out in the winter months when the amount of ice is peaking, differs drastically from traditional cruises that consider the presence of ice an avoidable risk. Although the number of Arctic cruises was rapidly increasing before the COVID-19 pandemic, cruises were carried out during the summer season when the sea ice cover was at its minimum.

Kemi, a city with approximately 21,000 inhabitants, has a long history of heavy industries. The fact that the sea is frozen for approximately one third of the year has traditionally caused difficulties in

transportation along the coasts of Finland. The presence of ice must be considered in the structural design of a ship. Furthermore, heavier ships with bigger engines also have poorer fuel efficiency, while payments for ice-breaking services have increased logistical costs and impacted companies' international competitiveness (Finnish Seafarers' Union, 2021). Although the service and tourism sectors play an important role nowadays, Mombetsu (over 21,000 inhabitants) and Abashiri (little less than 35,000 inhabitants) are traditional fishery cities. The Sea of Okhotsk is the southernmost part of the Northern Hemisphere, where the sea is frozen during winter. The sea around Hokkaido is in principle ice free year round, but sea ice from the north drifts every year to Hokkaido's northern shores. Drift ice was traditionally considered in Mombetsu as the "white devil," which caused trouble for fishermen and subsequent maritime accidents. Therefore, a ceremony to pray for the early disappearance of ice was held annually in a local temple from 1887 until the 1990s. While the aesthetic value of drift ice captured the attention of a famous painter, Shinji Murase, in the 1950s, the wider interest in the positive aspects of ice rose only in the 1960s (Fukuyama & Edelheim, 2022; Fukuyama & Shikida, 2019).

Tourism has developed in all three cities since the mid-1980s, specifically through ice-breaking and winter tourism. The future of tourism-related activities, where significant resources have been invested and can bring important revenues to communities, is linked to the changes taking place at the global level. While the tourism sector in general is vulnerable to economic fluctuations and the COVID-19 pandemic has caused unforeseen disturbance to tourism markets, global warming is estimated to have a dramatic impact on tourism-related activities in these three cities. In other words, the situation turns into one in which *missing ice* is a problem rather than *having ice*. This requires resilience-building initiatives from the local communities.

Methodology

In addition to the analysis of published reports, media sources, and numerical data describing the features of icebreaker tourism-related activities, as well as a literature review, this research is based on extensive fieldwork in Kemi, Mombetsu, and to a lesser extent in Abashiri. The empirical ethnographic analysis is based on semistructured (individual or group) interviews with experts, a wide range of tourism stakeholders, and participatory observation. The selection of informants was based on purposeful sampling supported by snowball sampling. Thus, the selection of interviewees reflected their position in relevant organizations, the authors' understanding concerning the roles and interconnections between different individuals and organizations, and local stakeholder' recommendations. Field work in Kemi was conducted in 2019–2020 (see Partanen, 2022; Partanen & Sarkki, 2021). The fieldwork in Hokkaido consisted of two main phases: the long-term study of drift ice tourism in Mombetsu 2013 onwards, and the thematically focused fieldwork in Mombetsu and Abashiri in 2020–2021. Due to the COVID-19-related restrictions, a few interviews were conducted online. Interviews were recorded and carried out in locations convenient to informants such as drift ice museums and community halls.

In case of the fieldwork in Kemi, the interview structures followed the themes of social, economic, and environmental sustainability and touched

topics on livelihood development, the relationship of environment and livelihoods, participation, employment, the current state of tourism, new openings, and the future of the city. The collected materials were categorized both based on the research themes and on the topics the interviewees brought upon. The questions that were used and issues that came up in interviews in Kemi formed the starting point for the planning of the second part of the fieldwork in Hokkaido. The original list of questions consisted of five wide categories: historical development; present and future; sustainability; seasonality; winter/sea ice tourism. However, questions gradually evolved to better match the environmental and societal circumstances in Mombetsu and Abashiri. The COVID-19 pandemic also emerged as a new important issue through which interviewees reflected their past, ongoing, and future activities and thoughts concerning resilience and sustainability. Furthermore, at the end of many semistructured interviews, there were relatively long parts that may be described as free discussion or exchange of ideas concerning the tourism industry and city development.

The fact that not all members of the international research team were able to understand all the recordings or their transcripts can be identified as a limitation. In such cases, authors familiar with Finnish and Japanese, as well as English as the shared working language, acted as intermediaries. Although none of the authors lived in Kemi, Mombetsu, or Abashiri, they engaged in intensive interaction with local stakeholders, including numerous discussions outside the formal and recorded hearings. As the authors have established wide personal networks within the case study communities, the need for a self-reflective approach focusing on not only the practical acts of research but also emotional and mental experiences affecting the process of interpretation has been identified. The authors believe that the ethnographic approach guided by a relatively loose theoretical and conceptual framework provided flexibility both to the individual interviews and evolution of the project, which helped us to understand the wider sociocultural implications of (ice-breaking) tourism in the three coastal cities. The data collection and theory-guided qualitative content analysis aiming at identification of patterns and connections developed

together in an iterative process (see Kohlbacher, 2006). Therefore, the emergence of ecotourism, educational tourism, e-tourism, and community-oriented development as key themes through which the various resilience and sustainability-related views were categorized and conceptualized was not predetermined but an interpretive process.

The qualitative comparative research setting, leaning on operations where at least partial sameness and differences are determined, is based on assumption according to which the three unique cases studied are comparable and enables analytical generalizations (see Kosmützky et al., 2020). Furthermore, systematic and contextualized comparison is also considered a method for distinguishing essential from trivial and identifying features that may be missed (of which significance would not be determined) in a single case study. Comparison often enables recognition of the choices, possibilities, and limitations of different actors. While many comparative settings in the field of tourism studies have focused on the process of converting comparative advantages into competitive advantages (Domínguez-Mujica, 2015), this study focuses on strategies of locally grounded adaptation and resilience-building processes.

Ethical questions were taken into consideration by obtaining consent from the informants, whose right to withdraw from the interview whenever and for whatever reason was recognized and respected, and by explaining how the data were to be processed and used. Extreme caution was taken in the storage and relocation of the data to avoid discrimination, stigmatization, and any other type of harm to participants. An utmost effort was made to ensure that the interview conducted did not harm the interviewees' position either within the organization they were working/actively contributing to or in the more general social intercourse.

The Emergence of Ice-Breaking Tourism in Kemi, Mombetsu, and Abashiri

History and Development Paths

Icebreaker *Sampo* is often cited as the beginning of modern day tourism in Kemi. *Sampo* served as a state-owned icebreaker in 1961–1987, before the city of Kemi purchased it from the Finnish

Maritime Administration in the name of the city-owned company Oy Jäänmurtaja Kemi Icebreaker Ltd. The vessel was renovated for a sum much higher than the purchasing costs, and started its new operations in 1988. During its initial years in Kemi, *Sampo* was used for both research and tourism. The original assumption was that research-related activities in cooperation with Wärtsilä Marin Ltd. and various universities would take most of the operational time, provide most of the revenue, and pave the way for tourism-related activities that were to be gradually developed. However, Wärtsilä Marin went into liquidation within a couple of years, and it soon became obvious that tourism was the only type of activity that provided income. However, these activities were unprofitable, and the icebreaker was an economic burden to the city, which had to make further investments and grant new loans. Eventually, the city rescued its earlier investments by purchasing *Sampo* from Oy Jäänmurtaja Kemi Icebreaker Ltd., which was going into liquidation in 1992. The situation gradually improved in the 1990s (Kemin Matkailu, 2013). Additionally, SnowCastle rapidly emerged as Kemi's second main tourist attraction after it was built for the first time in 1996. Besides *Sampo* and SnowCastle, tourism services in Kemi include restaurants, smaller attractions and services, activity businesses, and accommodations.

Throughout the 2000s and the 2010s, the icebreaker *Sampo* and the SnowCastle constructed annually until the winter of 2022–2023 (Saarela, 2022b) remained anchors of tourism around the Kemi region. Despite their struggles at different stages of *Sampo*'s history, many local tourism stakeholders consider them the flagships of tourism, which created a positive turn in the development of livelihood structure. As Table 1 shows, the number of passengers joining *Sampo*'s cruises has remained relatively stable for several years. According to the informants of this study, the significant increase in the number of visitors, cruises, and the amount of revenue that took place in 2016 was due to the change in strategy, which emphasized a growth-oriented approach for attracting new foreign visitors, especially from China. Kemi Tourism Ltd has also sought growth on land through investments made in launching the new SnowCastle Resort area, including an indoor ice

Table 1
Annual Number of Passengers in Ice-Breaking Cruise Vessels

City/Vessel	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Kemi/ <i>Sampo</i>	6,934	7,790	9,476	10,266	10,321	18,246	19,238	19,362	–	–
Mombetsu/ <i>Garinko II & III</i>	–	–	–	26,835	29,709	32,729	30,051	34,189	26,786	–
Abashiri/ <i>Aurora & II</i>	–	–	83,026	84,798	86,619	97,181	109,899	109,978	64,687	14,761

Note. Finnish data are calculated based on calendar years, but Japanese data refer to fiscal years. Sources: Data provided by informants and statistical data available at: https://www.city.abashiri.hokkaido.jp/030shisei/020toukei/010toukeisyo/files/R03_09_roudokanko.pdf; <https://www.city.abashiri.hokkaido.jp/030shisei/020toukei/060syouroukann/files/R3.pdf>; <https://mombetsu.jp/syoukai/toukei/files/R2toukeisyo.pdf>; <https://mombetsu.jp/syoukai/toukei/files/toukeisyo2020.pdf>

restaurant/castle that is kept frozen year around and a new hotel. The construction of these facilities, completed just before the COVID-19 pandemic stopped international and partially also domestic tourist flows, aimed to increase the total number of visitors and a longer (year round) tourism season in the Kemi area.

The gradual transformation of drift ice from a source of trouble into a positive tourism resource can be witnessed in the establishment of the Mombetsu Drift Ice Festival in 1963 as a positive celebration of ice and winter, the popularity and official recognition of Murase Shinji's drift ice art, and the beginning of scientific research focusing on Okhotsk Sea drift ice. Drift ice-related development was included in the municipal comprehensive plan in 1971. However, the work of Professor Masaaki Aota and the scientific findings describing the role of drifting ice as a carrier of important nutrients (ice algae) to the local ecological system and food chain played an important role during the second half of the decade in a positive shift in attitudes toward ice, especially in the fishery-related circles. The first International Symposium on Okhotsk Sea and Sea Ice (organized annually under the new name of the International Symposium on Okhotsk Sea and Polar Oceans) was held in 1986, and the religious ceremony was now a positively viewed annual event first organized in 1991, where the early appearance of drift ice was prayed for (Fukuyama & Edelheim, 2022; Fukuyama & Shikida, 2019).

The first ice-breaking vessel carrying tourists in Mombetsu, *The Garinko*, was put in service in 1987. This vessel was originally constructed as

Mitsui Shipbuilding's experimental ship for the development of Sakhalin oil and not for carrying tourists. The Okhotsk Drift Ice Museum of Hokkaido, GIZA (owned by Hokkaido Prefecture and managed by the Public Interest Incorporated Foundation), was established in 1991, and the original ship was replaced by the much larger *Garinko II* in 1996. The facility known today as the Okhotsk Tower, which has an observation deck below sea level, was opened in 1996 as the Okhotsk Drift Ice Research Center. The current drift ice tourism-related facilities in Mombetsu also include the new *Garinko III* (IMERU) vessel, Tokkari Centre (consisting of the Seal Land Marine Animal Protection and the Seal Sea Paradise Facilities), and a museum exhibiting the drift ice paintings of Murase. Although February is the peak season for *Garinko* vessels, it is sometimes used for fishing and charter cruises during summer. In the summer, Mombetsu often acts as a side destination for tourists visiting nearby locations famous for their flowers or the Shiretoko Peninsula.

The development of drift ice tourism in Abashiri has many similarities to that in Mombetsu. Drift ice has always been part of the local culture. However, understanding the importance of drift ice as a carrier of nutrients has changed people's attitudes toward the phenomenon. While the first Abashiri Okhotsk Drift Ice Festival was held in 1966, regional tourism was long based on tourists visiting the Shiretoko Peninsula (registered as a UNESCO World Heritage Site in 2005) east of Abashiri from late spring until autumn. Drift ice tourism, or year-round tourism in general, started in the mid-1980s following the improvement of the city-owned

Okhotsk Ryu-hyo (drift ice) Museum (managed by the Abashiri Tourism Promotion Company) and the establishment of the Memanbetsu airport. According to the informants, these developments were associated with a wider change in attitudes toward snow and snow-related activities. Furthermore, a special drift ice sightseeing train has been running between Abashiri and Shari since 1990.

The idea of ice-breaking cruises emerged in the late 1980s, when the Eastern Hokkaido Tourism Development Company, which had considerable experience organizing cruises for tourists around Shiretoko, negotiated with a travel agency interested in developing winter tourism in Hokkaido, the city of Abashiri, and the Transportation Bureau, who considered late winter/spring cruises too dangerous for vessels that were not ice-strengthened. Consequently, the Eastern Hokkaido Tourism Development Company commissioned a new ship in 1989 and borrowed the necessary funding from their mother company, the Nagoya Railway group. A Japanese self-defense force vessel called *Shirase* acted as a model for a vessel named *Aurora*. The cruises started in January 1991, while a sister ship *Aurora II* was taken into use in 1995. The Okhotsk Ryu-hyo Museum was rebuilt at its current location in 2015. While the museum has already been used as a backup option in case *Aurora* cruises are canceled due to bad weather, cooperation between them both has recently strengthened. *Aurora I* and *II* are regularly used as sightseeing vessels around the Shiretoko Peninsula during summer. Thus, the advantageous geographical position makes the operation of these vessels less dependent on the short and unpredictable ice-breaking cruise season. While the majority of tourists onboard *Aurora* have joined drift ice cruises, there have also been a few exceptional years when summer users have formed the majority.

Challenges

Naylor et al. (2021) concluded that niche cruise tourism in Alaska, carried out by regular vessels in an ice-free environment, reduces the coastal community's overall sensitivity to the impacts of ecological disturbance because it is less sensitive to seasonality as well as environmental and climatic change than the fishing industry. These findings

contradict our findings on ice-breaking tourism. Since the number of cruises that can be carried out in one winter season depends on the ice situation, the overall dependency on environmental circumstances is obvious.

Long-term observations have shown that the Bothnian Bay usually starts to freeze in December, cracks and thins between March and April, and opens up completely in May. While global warming is expected to reduce the extent of ice cover in the Baltic Sea and shorten the ice season, the variation between cold and warm winters will remain a characteristic of ice conditions. According to one estimate, by 2030 the extent of ice in winter will become significantly smaller, and the ice season may shorten by 10–20 days (Finnish Meteorological Institute, 2021). Notably, some parts of the Sea of Okhotsk will freeze between October and March. Ice formation mainly occurs in the northwestern part of the Sea of Okhotsk, but winds and sea currents spread the drifting ice, which usually reaches the northern shores of Hokkaido in late January or February and disappears in March or early April (Shiraiwa, 2018). Although there are significant annual differences, the long-term average of the drift ice period has been declining and is currently approximately 60 days in Mombetsu and 70 days in Abashiri (Abashiri chihō kishōdai, 2021; Mombetsu-shi, Sangyō-bu, Suisanka, 2023). While the ice volume, extent, and thickness are generally decreasing in the Sea of Okhotsk, the decrease in the ice volume and thickness has been most rapid in the southern part of the sea (Pishchalnik et al., 2021).

Many stakeholders involved in ice-breaking tourism are well aware that their operations cannot continue if the ice situation worsens, or that the activities will need to be modified to meet the changing conditions. The development of tourism without sea ice has been considered as a scenario during long-term planning in Mombetsu and the stakeholders involved in drift ice tourism already have concrete experience with the harmful effects of years with unstable ice conditions. The number of passengers increased rapidly in Abashiri after the second vessel was used in 1995 and, as Table 1 shows, exceeded 200,000 passengers in 2003. However, since 2004, there were 5–6 years when the drift ice arrived late, the cruise season remained short, and the number of passengers dropped. The

instability in the drift ice situation also affected travel agencies' interest in developing products around drift ice cruises. Although the ice situation improved, the number of passengers never returned to the level of the early 2000s.

Similarly, the length of the cruise season varies annually in Kemi, depending on the ice situation. When the icebreaker *Sampo* operates in the middle of the winter season, the ice thickness increases to 75–95 cm. However, at the beginning of the season, the ice thickness is often less than 20 cm, preventing different activities such as swimming in icy water while wearing a survival suit that has developed into a whole new experience for many visitors. Although the early start of the season is extremely important because of the large number of Christmas tourists arriving at Finnish Lapland, the shortening of the season from the other end has also caused a loss of revenue (Kemin Matkailu, 2013). SnowCastle built from actual snow and ice has already suffered from warm winters and a lack of snow.

In Mombetsu and Abashiri, the location—more specifically, the distance from the ship terminal to the site where drifting ice can be found—is an important factor affecting profitability and customer satisfaction. Although the construction of *Garinko III* was mainly motivated by the age of the *Garinko II* vessel, it was also a conscious reaction to the changing environmental conditions from the local stakeholders. The new vessel was designed to be faster to ensure that it can take tourists to see the drift ice even if the amount of ice is decreased and it is further away from the shoreline. The length of the cruises is limited, and the old vessel has occasionally been unable to travel far enough to find drift ice. While the new vessel is technically prepared to make longer cruises, according to the informants, such a development would necessitate new permissions from the Transport Bureau. Even if possibly adding to the (short-term) resiliency of business activities, longer cruises with poorer fuel/emission/passenger ratios would also be problematic from the perspective of environmental sustainability. The same can also be said about the recent initiative (carried out by nonlocals) to use an airplane departing from an airport far away from the Sea of Okhotsk for drift ice tourism (Fuji Dream Airlines, 2022).

The factors affecting the environmental sustainability of tourism are similar in northern Finland and Hokkaido. Tourists often make a long journey (typically consisting of both air and road transportation) to board ships that produce emissions. All the cities also have facilities—indoor ice restaurant/castle in Kemi, cold rooms in the Okhotsk Drift Ice Museum of Hokkaido in Mombetsu, and the Okhotsk Ryu-hyo (drift ice) Museum in Abashiri—that are kept frozen year-round. Based on information gained through interviews and group discussions, critical voices from local communities against the lack of environmental sustainability seems to be more common in Kemi. However, the attention paid to these questions has also varied greatly among informants in Kemi. The fieldwork data of this study suggest that the debate concerning cruise ships' negative impact on the local water quality through wastewater pollution, mentioned by Naylor et al. (2021) in their Alaska-based study, has not emerged as a point of conflict either in Kemi or in fishery-oriented cities of northern Hokkaido.

The relationships between the companies in charge of ice-breaking tourism operations and hosting communities have always been tight and have often divided opinions among local stakeholders. Already when the purchase of *Sampo* was discussed in the mid-1980s, the opinions of the City Council of Kemi were strongly divided. Similarly, many local decision-makers supported the idea of giving up *Sampo* in 1992, when the city had to purchase the vessel and assume the liabilities of the bankrupting city-owned company. Following the purchase, *Sampo* was transferred under the administration of the Port of Kemi, which chartered *Sampo* to the OY Jäänmurtaaja Kemi Icebreaker Ltd. for cruising purposes (Kemin Matkailu, 2013). The city of Kemi merged the companies behind *Sampo*, SnowCastle, and the Theater Restaurant of Kemi in 2008 under the management of Kemi Tourism Ltd. Icebreaker *Sampo* was transferred under the ownership of the recently incorporated port of Kemi Ltd. in 2012. The Port of Kemi Ltd. was responsible for the maintenance and manning of the ship, while Kemi Tourism Ltd. chartered *Sampo* for tourism-related activities. This situation continued until 2019, when Kemi Tourism Ltd. bought *Sampo* and is now completely responsible for its operations.

Although the city of Kemi has invested a lot in *Sampo* and other winter tourism-related initiatives, the relationship between ice-breaking tourism and the surrounding communities has been complex. The population of Kemi has dropped even though it was hoped that tourism would tackle the challenges of outmigration, diversify economic structure, and bring prosperity and employment to the region. However, the question of whether the municipality should focus on public service production or play an active role in the tourism industry has remained disputed over the decades. While some smaller tourism stakeholders believe that the public sector distorts competition, many of them are dependent on the success of city-owned products bringing visitors to Kemi. The cooperation between local and regional actors has evolved since the city of Kemi invested in the SnowCastle resort area, whose services compete with private accommodation and restaurant businesses. Furthermore, some informants described the products and services marketed to visitors as inauthentic and not appealing. Similarly, the change in the atmosphere of *Sampo* cruises due to the growth strategy and a rapid increase in the number of passengers has caused dissatisfaction. For example, it has been argued that part of the unique experience *Sampo* used to offer was lost when aiming for higher revenues.

The strong dependency on public support has also been a typical feature of Mombetsu-based sea ice tourism activities. While established as separate entities, management difficulties led to the decision to merge Okhotsk Tower and *Garinko* into the Okhotsk *Garinko* Tower company, including the Tokkari Center. Although the *Garinko II* vessel is owned by the company, the running of its operations as a purely private initiative has been impossible since the different sea ice-related facilities have been unable to maintain themselves without financial support from the city. When the construction of *Garinko III* was planned, it was clear that the company could not independently purchase a new ship. Therefore, the city provided the necessary funding and became the vessel owner. The company remains in charge of ship operations, but its ownership structure leaves it in a complicated position. The company owns *Garinko II*, and all revenue earned by the old vessel comes to the company, whereas the new vessel is borrowed from the city.

Destinations aimed at local and domestic tourism can in certain circumstances, such as those caused by COVID-19, be more resilient than destinations dependent on international markets (see Duro et al., 2022). In Kemi, SnowCastle used to be more locally oriented in its early days, but it can now be considered too distant a tourism enclave (Saarinen, 2017) for local or domestic tourists. The icebreaker *Sampo* is fundamentally distant because of its high price. Although the long-term effects of the COVID-19 pandemic remain unclear, an immediate impact on ice-breaking tourism can already be observed. As the great majority of passengers on board *Sampo* come from abroad, international travel restrictions forced the cancellation of the entire winter season in 2020–2021. Although the European customers returned to *Sampo* cruises, the total number of visitors during the 2021–2022 season was expected to be only one third of the pre-COVID-19 level. While the lack of East Asian tourists was the main reason behind the drop, the War in Ukraine also had a negative impact on demand at the end of winter season. The estimates concerning the 2022–2023 season were promising, but engine trouble prevented several *Sampo* cruises in December 2022. Furthermore, the smaller substitutive ice-breaking vessel could carry only part of the customers who had booked their trips (Saarela, 2022a, 2022c). Even though ice-breaking tourism in Hokkaido is less dependent on foreign visitors, the number of tourists onboard *Garinko* and *Aurora*, and visiting other drift ice-related facilities, went down as well. Furthermore, even in the days when there have been customers, ships have not been at full capacity while activities related to disinfection and temperature measurements have caused extra work and costs.

Ways Forward? Local Tourism Adapting to Multiscalar Changes

Tourism players in Kemi, Mombetsu, and Abashiri have established different strategies to cope with change and build resilience in the tourism context. The initial emergence of ice-breaking tourism as a new field supporting more traditional sources of livelihood can be considered a sign of renewal capability in the communities studied. However, issues such as COVID-19 in the short

term, the continuing questions of local cooperation, and environmental change in the long term pose challenges that demand new renewals within the established tourism sector.

In Kemi, the new SnowCastle resort that is open year-round can provide predictable and stable services regardless of environmental conditions, which can in principle be seen as a proactive adaptation strategy to changing environmental conditions. However, it remains to be seen whether the resort area will succeed, especially without the original snow-made SnowCastle. On the other hand, the hoped growth in number of customers at the resort area can become a debated topic in terms of resilience. While many wish for growth, several informants noted that tourism in Kemi is dependent on its calm image and lack of mass tourism. The growth in customer numbers in *Sampo* has already caused varying opinions among local tourism players. On the other hand, moderating the operations of *Sampo* can be interpreted as a strategy that is hoped to enhance resilience.

Sakuma (2019) noted that “many local and government leaders promote ecotourism as a sustainable approach to regional development” (p. 171) in Japan. Responsible ecotourism, including elements of education and awareness building, has recently received attention and may be a future direction for tourism development in Mombetsu and Abashiri. When established, different drift ice-related facilities were not only considered tourist attractions but were also strongly connected with the academic community. While observational studies and cooperative relations with scientists have continued, the International Symposium on Okhotsk Sea and Polar Oceans includes drift ice-related lectures targeted at 5th grade elementary school students (continued for more than 30 years), and the GIZA and Okhotsk Ryu-hyo (drift ice) Museum are frequently visited by elementary and junior high school student groups. Most trips are made by local schools or groups from neighboring regions. Thus, the development of educational tourism can be seen as a process of commercialization and the expansion of existing activities.

When describing their visions, the informants referred to their interest in developing drift ice and ocean environment tourism in a direction that would increase tourists’ consciousness of the environment

and global warming and would consist of elements of training, education, and personal experience. In practice, this could mean a combination of experiences gained during the icebreaker cruises and a deeper understanding of the drift ice phenomenon through the information disseminated in facilities on the ground. Another possibility already tested in practice is to bring experts from drift ice facilities onboard ships where they can share their knowledge with tourists onboard. Educational tourism has also been recognized as a way to develop the summer season and some recent developments, such as the building of *Garinko III* vessels that have new technical solutions and designs, do support training and ocean observation activities. However, the process of developing educational tourism should not be oversimplified, and the geographical locations of Mombetsu and Abashiri, for example, may pose challenges. According to one informant, only private schools on the Japanese main island can afford to make a school trip to northern Hokkaido. Although icebreaker *Sampo*’s activities in Kemi were originally connected with academia, its current operations do not consist of elements related to education or research. Such educational directions could open up new resilience-building revenues in these three cities. For instance, Sakuma (2019) suggested that ecotourism has been a way to build local resilience in Higashi, Japan. Ecotourism provided villagers with opportunities to consider the sustainability of their own community by learning to value local natural resources.

E-tourism has taken significant steps during and due to the COVID-19 pandemic. A model of tourism that does not cause travel-related emissions can be developed in line with the sustainable development agenda. Furthermore, while acting as a marketing tool for in situ tourism activities, it can, at least in principle, also provide year-round revenue and new jobs while strengthening the relationship between the remotely located host community and potential/former visitors. The fact that fieldwork in Kemi was mainly conducted before the COVID-19 pandemic may partly explain why only a few local informants referred to tentative ideas concerning e-tourism, although the Finnish Lapland Tourist Board’s (2020) more recent report emphasizes the development of e-tourism and its potential, especially for East Asian markets.

Based on the interviews, local stakeholders in Mombetsu are interested in e-tourism, and they already have experience in online lectures given to high school students. The commercialization of these kinds of services would ultimately bring some kind of economic burden to the participants, but online education and experience would still be much cheaper than traditional travel costs. Abashiri's drift ice tourism and *Aurora* vessel have already been selected as the destinations of the online tours of H.I.S. and Coop Travel, which were carried out for the first time in the winter/spring of 2021. One of the tours included online videos available free of charge for registered participants and an alternative collection of local gourmet products that the company delivered to paying customers. The participants who enjoyed the local delicacies while watching the video and asking questions via chat also supported local companies selling their products as souvenirs to visiting tourists (Itō, 2021).

Despite these activities and other attempts to utilize online-based solutions (social media influencers have been invited to the Okhotsk region for positive exposure), some informants have also emphasized the importance and value of personal on-site experience. This approach can be connected with another strategy to improve resilience and sustainability through stronger community involvement (Dolezal & Novelli, 2022), which could also include the reevaluation of local assets. The informants in Mombetsu and Abashiri emphasized the unity and close cooperation between local stakeholders. The players involved in drift ice tourism have worked together even on matters not directly related to sea ice, despite differences in ownership (private, city-owned, prefecture-owned) structure. Furthermore, the people living in Mombetsu have always played an important role in different drift ice-related activities: citizens create most of the ice sculptures to the Drift Ice Festival (the biggest one is made by the self-defense forces) while local volunteers support the organization of the International Symposium on Okhotsk Sea and Polar Oceans. However, some informants have also pointed to the increasing number of foreign visitors (prior to COVID-19) and decreasing interaction between drift ice-related facilities and the locals. Possibly reflecting these developments, the 2016–2020 plan for the promotion of self-reliance of depopulated

areas prepared by Mombetsu city emphasized the need for local collaboration while recognizing the internationalization of drift ice tourists. The plan also called for year-around tourism and referred to the local nature, food culture, industry, history, and culture as tourism resources (Mombetsu-shi, 2015).

Drift ice tourism and the *Garinko* vessel have been described as icons or recognized symbols of local tourism (pictures of the vessel are highly visible in public spaces, private enterprises such as hotels and restaurants, and even local buses) around which further regional cooperation can be developed. Yet, there are also voices hinting that the local feeling of ownership could be higher. The Okhotsk Tower has organized formal public hearings with local students and housewives to ask for their views concerning the development of the facility, and the city of Mombetsu has started a new community space where local people are encouraged to share their ideas concerning the development of the city in an informal environment. While these kinds of initiatives are clearly a way to actively listen to local voices, Kemi can also offer an example of community-oriented development, which started already before the pandemic.

Small-scale summer tourism cruises, based on the history of heavy industry and maritime culture in Kemi, have been launched in recent years. The cruises are headed to the old industrial island of Laitakari, which was previously deserted but recently reconstructed as a tourism and recreational attraction. During winter, if there is enough ice to cover the sea, the island can be reached by skiing. According to the informants, the starting point was to respect the local culture and communities while developing an attraction for people with strong linkages to the area. Furthermore, when the recently appointed CEO of Kemi Tourism Ltd explained the decision not to build a real snow castle anymore, he emphasized that the same area is now dedicated to constructions and activities representing the “authentic local winter atmosphere” and showing how the locals enjoy winter (Peltoperä, 2022). As Partanen (2022) noted, creating not only economic value through tourism but also bringing local cultural environments back to life through recreation possibilities also serves local residents. Furthermore, the initiative can be considered an alternative way to attract tourists without aiming for big

international growth. Moreover, offering summer activities and deriving them from themes such as local history and culture can be seen as ways to prevent the risks of activities dependent on ice and snow.

During fieldwork and interviews, informants in Mombetsu introduced some visions on how to connect the existing drift ice-centered tourism to local traditions and the history of the city. Furthermore, facilities such as the Mombetsu Museum already closely cooperate with other drift ice-related facilities even if they are not often visited by tourists. While wider community-level discussions and implementation of these ideas have not yet occurred, they seem to resonate with the views that mass tourism is not welcome in Kemi, that new diversity can be achieved by aiming for domestic markets and local tourists, and that utilizing local assets through new ways of bringing up industrial history as well as traditional marine culture is the way forward. These kinds of voices also echo the findings of Naylor et al. (2021) in Alaska concerning the local community's support for small groups and independent visitors who appreciate local life and the characteristics related to traditional livelihoods.

The voices of the visitors may also help identify hidden local resources. For example, when the stakeholders in Mombetsu organized test tours for female travelers from Sapporo and Tokyo, they learned that visitors valued the beautiful night sky full of stars (an asset of which commercial value had not been identified by the local tourism players). Subsequently, the *Garinko II* vessel was utilized during a summertime test cruise for stargazing purposes.

Discussion

In Kemi, Mombetsu, and Abashiri, ice-breaking tourism has been a way to build local resilience in terms of vitality and diversifying livelihood structure. However, corresponding the situation of many rural mountainous communities dependent on ski tourism (Steiger et al., 2019), the capacity of these three cities to quickly adapt and redirect their activities is limited because they have invested significantly in the existing structures of ice-breaking and winter tourism. History has already shown the

difficulties related to tourism based on uncontrollable natural phenomenon, and climate change will make the future winters even more unpredictable. While recent adaptation and resiliency-building strategies have focused on searching for alternative use of old, new, and renovated vessels, attraction of new types of (often domestic) visitors and developing related activities and facilities that are less sensitive to seasonal variation and changing climate conditions, it is unclear whether there is a future with sea ice-related tourism in these three cities and, if so, for how long. In skiing centers, artificial snow is already used to compensate for the lack of snow, but how does one compensate for the loss of sea ice?

Besides the long-term challenges bound to planetary-scale changes, these case studies have also revealed the features of cruise-related conflicts that are not connected with the often-mentioned dichotomy and juxtaposition between big international operators and local communities. Instead, the desirability and sustainability of the locally owned and operated services built around the local natural asset (the presence of ice) can and have divided opinions among the local public and private stakeholders. The results of this study and those of Naylor et al. (2021) indicate that resilience and resilience-building are highly contextual. The traditional cruise industry can adapt to changes in market demand, regulatory frameworks, or environmental conditions by changing their routes and areas of operation. Local-based icebreakers do not have similar possibilities.

It may still be too early to analyze the long-term impacts of the COVID-19 pandemic in the ice-breaking tourism, but it has surely directed attention to vulnerabilities related to the dependency on foreign customer base, for example. While the post-COVID-19 recovery is hoped for in the host communities, Vale's (2014) advice to evaluate whether bouncing back to a previous state is the most desirable way to build resilience or whether something new ought to be initiated is worth keeping in mind. The identified tourism development paths and resilience-building initiatives are different in scale and aim for different kinds of outcomes in terms of growth, for instance (see also Kulujärvi, 2019). Furthermore, small-scale initiatives deriving from local history and culture have been

recognized as potential ways to diversify the tourism structure both in Northern Finland and Japan.

Besides forcing local actors to develop future-oriented strategies focusing on resilience, visible changes may also challenge the evaluation of the long-term sustainability of one's own activities and their contribution to the changing circumstances around winter cruise tourism. Although the players involved in ice-breaking tourism can make efforts to lessen their own environmental footprint and search for more sustainable practices, their business is very much dependent on decisions made in different parts of the world. While their decisions may have local significance, their impact on global warming is marginal. However, the cumulative effect of various small-scale efforts to enhance the sustainability of tourism can contribute to climate change mitigation at the global level and thus build local resilience. Moreover, it has been recognized that the ice-breaking tourism experience can be used to educate tourists about the climate change and its effects. Nevertheless, it can be wondered whether the possible collapse of ice-breaking tourism in these cities is, in the future, used as a warning example of the local effects of the global environmental change if rapid climate actions are not implemented.

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