

Developing 'Unused Resources' for Tourism: Cases of Drift Ice in Hokkaido and ICEHOTEL in Lapland

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The characteristics of the North tend to be described negatively, such as sparsely populated, peripheral, and disadvantageous due to coldness, darkness, or heavy snowfall. This is true both for Japan and for the Nordic countries. In northern history, the relationship between humans and nature, snow and ice, has gradually changed as humans began to take advantage of their environment. Nature used to be a place to live; however, it is now used for experiences, especially in snow and ice tourism. This study examines the process of developing unused community resources in the North by using theoretical 'resource studies' through a comparative case study between Drift Ice in Japan and ICEHOTEL in Sweden with the distinct aim of clarifying a mechanism of resource utilisation and its associated issues. Local endeavours seen in both processes are chronologically divided into 4 phases: the periods of Dawn, Establishment, Growth, and Maturity. Then, synchronically, the mechanism of promoting these utilisations can be illustrated in four quadrants, namely 'cultural branding,' 'cultural marketing,' 'scientific branding,' and 'scientific marketing.' Furthermore, it can be considered that the role of snow and ice tourism development is cultivating peoples' awareness of nature preservation during climate change, based on the integrated analysis of both Japanese and Northern European approaches. Thus, this study shows the significance of enhancing the value of snow and ice and the potential of them in the north.

Keywords: resource studies, unused community resources, process of utilisation, snow and ice tourism innovations, Japan and Sweden



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Introduction

The characteristics of an urban, modern, and heavily populated 'south,' compared to a rural, traditional, and sparsely populated 'north,' not only fits Northern Europe or North America, but also, maybe somewhat surprisingly for international audiences, Japan. Japan is an island nation with four main islands and thou-

sands of smaller islands spread out over almost four thousand kilometres from south to north. Being in the middle of two major oceanic currents means that the south of Japan enjoys warm, and even sub-tropical climates, whereas cool, almost arctic conditions prevail in the north.

Since around the 2000s, tourism-based regional

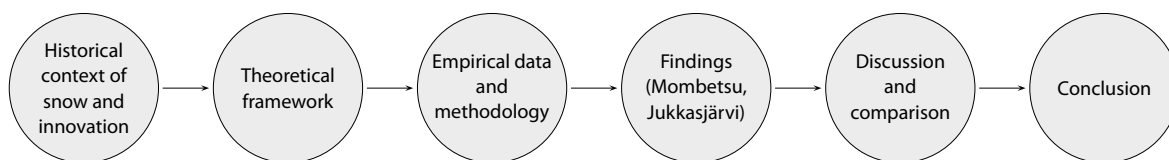


Figure 1 'Road-map' of this article

innovations, which make use of community resources for more than just locals, have been garnering attention (Nishimura, 2009; Shikida et al., 2009; Okoso, 2013; Morishige, 2014). The social background for this is a declining and aging population in both the north and the rural south of Japan. While these movements were already being promoted in the 1990s (Shikida, 2009), regional revitalisation has been gaining momentum as a national policy since around the 2010s, and thus, regional development has become a more serious issue (Fukuyama & Shikida, 2019). However, there are geographic conditions that make such development difficult. Despite its reputation for densely populated urban areas Japan has, for example, several remote islands, mountain villages, and depopulated areas which are classified as conditionally disadvantaged areas. Apart from geographical features, 'heavy snowfall areas' are also designated as conditionally disadvantaged (Ministry of Internal Affairs and Communications, 2015).

On the other side of the world, similar characteristics also describe disadvantageous areas in the north of Europe, in Scandinavia. 'Sparsity' is the first characteristic describing regions where low population densities have been causing local challenges for the economy (Gløersen et al., 2006). Then, 'peripherality' is also considered, denoting the distance to major European markets (Gløersen et al., 2006). These regions are so-called 'low-amenity' areas, characterised by economic decline or outmigration (Carson et al., 2018). Indeed, those rural areas in the far north are regarded as being in socio-economic decline, having a sparse population, and suffering from a lack of services and infrastructure (Vuin et al., 2016). Furthermore, the lack of diverse employment opportunities in many peripheral places tend to cause unemployment (Müller & Jansson, 2007), and the cold climate brings an extra challenge for these regions (Gløersen et al., 2006).

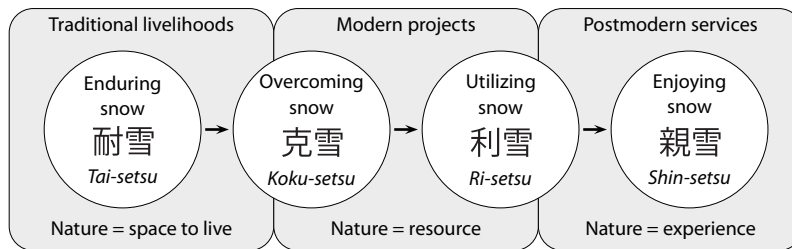
Regarding the similarity of the above situation in Japan, there are also few employment opportunities in disadvantageous areas due to problems stemming from its rural past; the populations age or move away. Especially in areas with heavy snowfall these problems overlap, resulting in an increasing disadvantage (Ye et al., 2007). According to the Ministry of Land, Infrastructure, Transport and Tourism in Japan, 'industrial development is stagnant, and the improvement of the living standard of residents is hindered due to heavy snowfall.' Hence, in order to promote industry and improve residents' living, the Act on Special Measures for Heavy Snowfall Areas has been established (Ministry of Internal Affairs and Communications, 2015).

In the near past, a disaster called the '38.1 heavy snowfall' struck mainly the Hokuriku region in northern Japan in 1963. The National Police Agency reported about 600 casualties and that more than 11,000 homes were destroyed (Fukui, 1963). Such devastation is called 'snow and ice disasters' in Japan and much engineering research on disaster control has since been undertaken (Takahashi, 1997). In addition, snow and ice disasters are no longer restricted to individual losses, but also encompass economic damages on a societal scale, and even the hindrance of social function (Numano, 2006). In this way, snow and ice in heavy snowfall areas are considered to be negative for communities in northern Japan.

With this geographical context as a base, we will initially give a historic context of snow innovation, followed by our theoretical framework, especially resource studies, and our methodology. This leads us to our two empirical cases, Mombetsu in Japan, and Jukkasjärvi in Sweden, which will be compared and contrasted based on our framework (see Figure 1).

Historically, humans in the north have long been (and are still) suffering from snow and ice disasters caused by Mother Nature (Wakahama, 1995; Fukuya-

Figure 2
Historical Change in Relationship
between Humans and Nature
(based upon Oshima, 1987;
Numano, 2006; Ranta &
Suopajarvi, 2019)



ma, 2015). Unlike other natural disasters, those caused by snow and ice are remarkable because of their closeness to our everyday lives (Numano, 1984). From a human perspective, Numano (2006) describes the initial relationship between humans and snow as '*Tei-setsu* (Giving up with snow)'; Oshima (1987) alternatively explains that humans have long been in a '*Tai-setsu* (Enduring snow)' relationship.

However, we recently observe many cases where snow and ice are innovatively used for tourism both in Europe and Japan, such as by locals in Hokkaido, the northern main island of Japan (Fukuyama, 2015), as well as snow constructions in Lapland (Edelheim, 2014). There is, for example, an outstanding case of a '*Jifubuki* (Blizzard) tour' creation in Aomori prefecture, in northern Japan. *Jifubuki* is in relative terms a negative weather phenomenon that threatens human lives. However, the reversal idea generated by locals to actively promote it, and endeavours performed by local stakeholders, have eventually enhanced the positive value in the negative *Jifubuki* phenomenon. In addition, this has led to regional development (Narumi, 1997). Surprisingly to those who previously feared and shunned the phenomenon, both domestic and international tourists consume an innovative service, simply by experiencing this *Jifubuki*.

Not only the *Jifubuki* tour in Japan, but many other cases globally, show that winter tourism-based regional development has gradually gained momentum by utilising negative community resources, snow and ice, in northern regions (Fukuyama & Shikida, 2019). In this regard, the historical changes in the relationship between humans and snow in Japan has certain phases, continuing from '*Tei-setsu* (Enduring snow)' mentioned above, to '*Koku-setsu* (Overcoming snow)', then '*Ri-setsu* (Utilising snow)', and finally

'*Shin-setsu* (Enjoying snow)' (Wakahama, 1995; Numano, 2006).

Relatedly, in Northern European research, there is a remarkable study that suggests the meaning of nature for humans has changed in three phases. Ranta and Suopajarvi (2019) indicate that the first phase, pre-modern, used to mean a 'Space to live.' This meaning was followed by understanding nature as 'Resources' in modern times and finally it comes to be understood as an 'Experience' in post-modern times. Building on these models, we considered the similar recognitions in Japan and Northern Europe in an integrated fashion (Figure 2).

Although Figure 2 is drawn from a macro perspective, it includes many invisible micro movements back and forth among each phase; humans have gradually and eventually created experience-based tourism by making positive use of something that was previously perceived negatively: snow and ice. In this way, we confirm here the historical changes of the human-nature relationship based on the above integration of both northern regions.

Theoretical Framework for Analysing the Process of Snow and Ice Tourism Creation

In order to examine the actual conditions of promoting snow and ice use, we need firstly to establish the conceptions of snow and ice both at a time 'before' and 'after' tourist utilisation in the regions took place. As for *Jifubuki*, snow and ice are 'after' having been utilised for tourism, logically, a tourism resource. On the other hand, there is significant research in which snow and ice 'before' being utilised is regarded as 'unused community resources.' Mitsui Information Development Research Institute (2003) classified the characteristics of unused community resources into

three types from a market perspective, which are 'ordinary,' 'abandoned,' and 'negative.'

Thus, this study notably adopts mainly a theory of resources, including community resource and tourism resource studies, which are common in Japan. Yasumura et al. (2019) pointed out that those resource studies are not well known in the world, therefore, this Japanese analytical approach can contribute to other global research by offering a different perspective. Of course, we recognise that there are several significant Northern European research papers related to this theme, such as about tourism product development through a cultural approach (Garcia-Rosell et al., 2007), creative connections between tourists, entrepreneurs, and destination dynamics (Jóhannesson & Lund, 2017), the value creation in experience-based tourism (Jensen & Prebensen, 2015), and recent 'place-based resources' linked to nature and culture (Fredman & Haukeland, 2021). Hence, we are just focusing on the future possibility of developing more multidimensional analytical methods for the sake of value creation in tourism by exchanging plural ideas in different ways.

While there are many previous studies on community resources in Japan (e.g. Mese, 1990; Shikida, 2012), the Mitsui Information Development Research Institute defines it as 'all tangible and intangible elements that exist in a region and can be used for human activities' (2003, p.3). Regarding its utilisation, Nagata (1988) began a pioneering study on national use of local resources. Taniguchi (2014) also considered these uses in the context of rural development; however, these are only examinations at national policy level. In addition, there are several studies considering development of disadvantageous areas (Yamaguchi et al., 1996; Sakamoto et al., 2009; Shoji, 2010). Nevertheless, most focus only on analysing the effects and success factors of each case, not attempting to theoretically generalise the idea.

Considering tourism resource theory critically, several researchers have discussed how to classify tourism resources (e.g. Ashiba, 1997; Suda, 2003) and Takahashi (2014) systematically summarises this theme chronologically, but there is still no unified view for tourism resources. Kagawa (2007) relatedly explains

that two different perspectives, business theory and behaviour of tourists, complicate the interpretation of the target tourism resources. Teramae (2017) also extensively argues that the evaluation of tourism resources is only a matter of tourist preference. In association with snow and ice, Suda (2003) states that snow and rain are quite intangible resources and have not been direct tourism targets before. However, 'the phenomenon of snow or drift ice has recently created tourism effects similar to tangible resources in cold regions with their long-lasting period' (Suda, 2003, p. 91). Regarding this evaluation change, snow is considered an indispensable regional resource in the era of the above '*Shin-setsu* (Enjoying snow),' and it has changed from something troublesome to the region's identity (Numano, 2006).

Based on prior research, this study basically adopts the above resource studies as its theoretical foundation to analyse a dynamic process of utilising unused community resources. Sato (2008, p. 9) defines resources as a 'bundle of possibilities to be worked on' and Zimmermann (1985, p. 13) defines them as a 'function which a thing or a substance may perform' (p.13) and indicates that the process of resources utilisation contains 'Cultural wants' and 'Scientific abilities' (p. 25). In addition, an underlying theory in marketing is also adopted as a subsidiary in this study concerning value creation. It is important for community-based tourism development to combine both branding and marketing properly (Shikida et al., 2009). Furthermore, this study invokes the usefulness of 'brand building by culture' and 'marketing by cultural idea' suggested by Aoki (2008), and we considered them in an integrated manner with resource studies.

Simply expressed, this study examines the innovation process of turning something valueless into valuable tourism resources that can contribute to regional development. Therefore, the purpose here is to clarify factors and issues that can be successfully promoted to utilise 'unused community resources' for winter tourism development. Moreover, this study discusses the significance of snow and ice tourism development with their value enhancement. This is done through analysing endeavours conducted by locals in northern regions. Here, these local activities are first anal-

ysed chronologically, classifying different characteristic phases. Then, the resource utilisation mechanism will be discussed synchronically, using a framework of integrating the above resources studies and underlying theories in marketing. Lastly, this study derives a new concept of humans' recognition of snow and ice based on the integrated analysis of both Japanese and Northern European cases.

Research Sites and Methodological Approach

This study compares two cases of snow and ice tourism creations, drift ice in Mombetsu city in Hokkaido, Japan and ICEHOTEL in Jukkasjärvi in Kiruna city, Sweden. Drift ice was previously called a 'White Devil' (Nakamura, 1992) due to its negative impact, especially on the local fishing industry. Nevertheless, it has become a major tourism resource and it can be observed that local stakeholders now positively evaluate its contribution to the regional economy through tourism (Fukuyama & Shikida, 2019). On the other hand, ICEHOTEL in Jukkasjärvi, Swedish Lapland, is the world's oldest ice hotel (Garcia-Rosell et al., 2019). Before that, snow and ice structures tended to be for private use or used for a limited duration. But ICEHOTEL now attracts many international tourists, and its fame has resulted in other ice or snow hotels being built in different cool climates, including Hokkaido. In both cases, the process of developing unused resources, snow and ice, were intentional endeavours by locals. Therefore, it should be possible to analyse factors and issues for promoting these utilisations.

Mombetsu city is located in the centre of Okhotsk Sea coast, which is a good fishing ground (Figure 3), with the coordinates of 44°21' north and 43°21' east and approximately 21,000 inhabitants. Most of Mombetsu's economy is dedicated to fishing for cold-water species such as crab, and the fishing industry has produced around 270 million euros (2020), including processed products. Regarding weather, the annual snow-fall average is over 480 centimetres, and the lowest recorded temperature was -24.7°.

On the other hand, Kiruna city is located at the coordinates of 67°51' north and 20°13' east, which is about 200 km north of the Arctic Circle (Figure 4). Modern Kiruna was founded around 1900, and min-

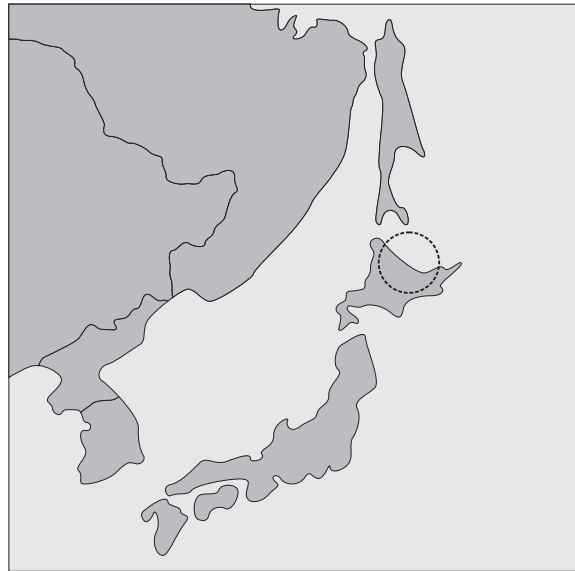


Figure 3 Map of Sea of Japan with Mombetsu indicated



Figure 4 Map of Northern Europe with Jukkasjärvi indicated

ing iron ore rapidly became its major industry; today it is the largest mine in northern Europe. Over 2,100 of Kiruna's 18,200 inhabitants are employed by the mining company LKAB and related companies. As for the weather, the annual precipitation is about 59 centimetres, and the lowest temperature recorded was -43.3°.

The ICEHOTEL is built each year in Jukkasjärvi (population approximately 600), located 16km away from Kiruna's town centre.

Concerning the methodology, we adopted multiple research methods and triangulation in this study, in order to clarify endogenous endeavours by locals for both chronologically and synchronically sufficient analysis. Our stated aim was to examine a resource-utilising mechanism, and its associated issues, in two empirical cases.

Firstly, we conducted semi-structured interviews with stakeholders and key persons in the target communities, 80 locals in Mombetsu (2013–2022) in a longitudinal survey, and 28 in Kiruna (2019) in a short but concentrated period, including some preliminary surveys in Rovaniemi about snow hotels in Finnish Lapland (2018–2019). The different numbers of respondents at the different locations were based on convenience sampling, but also on achieving saturation of new themes collected in our interviews. Secondly, participant observations were undertaken at both case locations as guests, and as hosts at the backstage of attractions. This included at warehouses, offices, and workshops or in discussions with some important stakeholders and international ice sculptors while actually staying at ICEHOTEL in Jukkasjärvi or boarding *Garinko*, a tourism icebreaker, in Mombetsu. Lastly, searches of local documents and literature at both Mombetsu and Kiruna libraries were carried out, including local newspapers, to obtain information about local evaluations. Hence, this triangulation made it possible to apprehend many deep regional realities subjectively, in an objectively appropriate balance from micro-, meta-, and macro- perspectives. And thus, the diverse collected data from all the above-mentioned methods was carefully analysed both chronologically and synchronically to clarify a resource utilisation mechanism and its issues.

Findings with Chronological Analysis

The Case of Drift Ice Tourism Creation

In Mombetsu, Drift ice was once hated by locals to the extent that it was called 'White Devil' as mentioned above. Especially for fishermen, the long-term stay of drift ice during winter hinders their livelihoods, which

directly leads to a decrease in income. Therefore, it had been considered that drift ice was a negative natural phenomenon that could close the region due to this predicament and extreme cold. According to Aota, who was involved in the research of drift ice for many years at Hokkaido University, important reasons why locals hated it were mainly: (a) fishing damage, (b) marine accidents, (c) winter unemployment, and (d) extreme freezing (Aota, 1993). Regarding (a) and (b), for instance, Chishima (1966) reported that the damage to the Hokkaido fishery industry from drift ice in 1956 exceeded 23 million euros, about 80 fishing boats encountered marine accidents, and 14 people perished. In addition, damage has also occurred in aquaculture such as scallops, whelks, and kelp. Thus, drift ice has caused serious damage to society, including fishing and other related local industries (Chishima, 1966).

In consideration of those serious phenomena, therefore, the 'Praying festival for drift ice to leave early' had been held, mainly by fishermen, at a local temple for many years. The beginning of this praying festival, indicating that the region was hostile toward drift ice, is said to be the Ryujin (Dragon God) Festival held at Houon Temple in 1887. This festival was held continuously in Mombetsu until around 1997 (pers. com. Chiel priest, 2 October 2018).

However, drift ice has been dramatically transformed to a positive tourism resource. For example, in 1996, the sound of drift ice was selected as one of the '100 Soundscapes of Japan,' and drift ice was also certified as a Hokkaido heritage site together with *Garinko* in 2004. *Garinko* is the world's first tourism icebreaker, launched in 1987. Passenger numbers of *Garinko* were about 19,000 in 1997 and peaked at 53,300 in 2002.

Another form of tourism utilisation of drift ice is the Mombetsu Drift Ice Festival. While the details of this will be referred to below, the number of visitors to this event reached a peak of about 500,000 in 1985, from about 10,000 when it was first held in 1963. In addition, the Okhotsk Sea Ice Museum of Hokkaido opened in 1991, where visitors can experience and watch exhibitions about the science of drift ice. Since its opening, the annual number of visitors has been about 60,000 (excluding the COVID-19 pandemic pe-

Table 1 Four Phases of Developing Drift Ice

Phase	Period	Characteristic
1 Dawn	1940s– 1950s	Attempts to improve negative value started on an individual basis
2 Establishment	1960s	Focused on positive value with collaborations among individuals
3 Growth	1970s	Promotion to share positive value with continuation of local endeavours
4 Maturity	1980s– 1990s	Involvement of local residents and the public with socially positive evaluation

Notes Based upon Fukuyama and Shikida (2019).

riod), and remarkably, it is not only used by general tourists, but also by locals for various events, especially for local children and students. Hence, it can be considered that drift ice is now a community resource closely related to this local area. Furthermore, the Okhotsk Drift Ice Praying Festival even began in 1991, now to pray seriously for an 'early arrival' of drift ice.

In the process of changing perceptions of drift ice since the 1940s until the 1990s, there were many voluntary endeavours conducted by various local stakeholders. We have analysed them and classified them into 4 phases (Table 1).

A hallmark of phase 1 (Dawn: 1940s–1950s) was the start of initial efforts to improve the negative reputation of drift ice, or of individual efforts to enhance its value as a result, in a situation where the regional focus was only the actual damage to the community. At this point, collaboration in the region had not yet occurred, but individual attempts were made to utilise the perceived negative drift ice as a resource.

For example, Murase, a painter who was appointed as an art teacher at Mombetsu High School in 1949, was fascinated by the beauty of drift ice, and has been painting it as a motif throughout his whole life since then. Murase also began a Sunday painting class, where local children could learn how to paint. The number of Murase's drift ice paintings is said to be

in the thousands, although a local story claims that Murase was at one stage beaten by residents who disliked his painting the regional enemy.

In Phase 2 (Establishment: 1960s), a positive valuation was actively developed for the negatively perceived drift ice in some parts of the region. In addition, the coordinators of individual resource utilisation activities had begun to collaborate within this region, and the effects of such movements strengthened the transmission of the positive value of drift ice and promoted resource utilisation. In 1961, an art enthusiast, Tanaka, who studied painting and Ainu indigenous culture near Lake Toya, returned to his native Mombetsu. Tanaka became the president of a small company and started voluntarily to arrange various kinds of local festivals for children. He and other stakeholders advocated for, and coordinated the Mombetsu Drift Ice Festival, despite some opposition against this idea, and financial difficulties. Notwithstanding this, the first festival in 1963 turned out to attract about 10,000 people. Tanaka also created a storytelling tradition, 'Tale of Drift Ice,' on the theme of Ainu culture, which was announced at the second Drift Ice Festival in 1964.

Since then, Murase has tried to promote the beauty of drift ice both inside and outside Hokkaido by holding the Okhotsk Drift Ice Exhibition, and he started to collaborate with Tanaka, a fellow member of the Mombetsu Cultural Federation. Hokkaido University simultaneously established a research facility in Mombetsu, and the world's first radar observation station operated by Aota and colleagues was founded. Thus, the characteristics of this phase were that individual activities using drift ice were linked together, and such movements gradually led to cultural utilisation in the community while scientific research had begun.

The characteristic of phase 3 (Growth: 1970s) is that the endeavours of stakeholders to create and share the value of drift ice were developed at a sustainable level. These continuous resource utilisation activities have facilitated the sharing of the positive features more widely in region. For example, the data obtained from the above-mentioned radar observation were firstly provided to local fisheries, which consequently led to an obvious decrease in casualties by drift ice. Addi-

tionally, Hoshiai, a natural science researcher, discovered in 1977 that 'ice algae,' an occurrence confirmed in the Antarctic before, also adhered under drift ice in Mombetsu. Aota, who accompanied Hoshiai, proved that the food chain originated from ice algae was the very reason for the rich seafood resources in Okhotsk Sea, and continued to explain this mechanism patiently to local fishermen with his own easily understandable words. Eventually, the positive ecological roles of drift ice were elucidated from this natural science field.

Concurrently, the socio-economic situation surrounding Mombetsu changed. The local Kounomae Mine, which once boasted the best coal output in East Asia, closed in 1973. Furthermore, at sea, international regulations restricting fisheries to 200 nautical miles impacted negatively on Mombetsu's fisheries economy, starting in 1977. Under these circumstances of a deteriorating local economy, Mombetsu city started a comprehensive plan to promote the development of drift ice. Thus, it is considered that the use of drift ice as tourism resources gradually began.

Then, in phase 4 (Maturity: 1980s–1990s), more citizen participation was achieved, and positive evaluations of drift ice were widely shared in public. Aota and his colleagues encouraged more locals to participate in the development of resource utilisation, and Mombetsu city supported this movement. For instance, in 1986, Aota and local stakeholders started to host the Northern International Symposium where researchers from other northern countries, jointly with domestic researchers, presented their studies on drift ice or sea ice. An executive committee of local volunteers handled planning and operations. Aota also intentionally set special lectures on cultural themes in order to connect scientists and local residents organically. Furthermore, Aota launched and co-hosted the Children's Drift Ice Symposium, which included quiz events to let children compete for the title of 'Dr. Drift Ice.'

After that, the tourism-related use of drift ice expanded with the launch of the above-mentioned ice-breaker *Garinko*, and Mombetsu municipality eventually adopted the 'Declaration of Drift Ice City' in 1982. Finally, the Okhotsk Sea Ice Centre of Hokkaido opened in 1991. In this way, the practice of enhanc-

ing the value of drift ice was systematically promoted with the support of the society, including the transmission to the next generation, and this phase was also a time when the significance of the contribution to the regional economy from scientific research was recognised.

The Case of the Creation of ICEHOTEL

According to Selberg, the mayor of Kiruna city, only a few tourists visited Kiruna during the winter months of the frigid polar nights in the past. The number of guests in January 1988, for which statistics exist, was only about 2,900. However, the predecessor of ICEHOTEL was created in 1990, and by 2007, the figure increased to 15,500; in other words, more than five times higher. Tourist numbers in Kiruna have gradually increased during the 1990s–2000s, which was a particularly important period from the creation to the development of ICEHOTEL in Jukkasjärvi.

More recently, according to Schilar and Keskitalo (2017), the number of annual guests to ICEHOTEL alone has reached about 50,000 to 60,000 every year (excluding the term of the COVID-19 pandemic). Furthermore, ICEHOTEL has been contributing to the tourism-based regional development of Kiruna in collaboration with local tour operators that offer a variety of activities such as northern light tours, cultural tourism by Indigenous peoples, snowmobiles and dog sledding experiences. Thus, the severe winter months in Kiruna have dramatically transformed into winter tourism which has made the region famous in the world.

The latent beginning of this ICEHOTEL creation can be seen back in the 1970s. Bergqvist, the representative of the founding members of ICEHOTEL, started a community-based company which provided tourism services in Jukkasjärvi near Torne River, especially outdoor activities in summer. However, in 1986, a serious accident occurred during rafting and the company began to wonder if they could create a new business in winter. From that point, this series of incidents should be considered as a dawn of ICEHOTEL creation, and we analysed the process of developing ICEHOTEL chronologically in a similar manner to the case of drift ice. The local endeavours to enhance the

Table 2 Four Phases of Developing ICEHOTEL

Phase	Period	Characteristic
1 Dawn	1980s	Trial to create new value in unused community resources individually
2 Establishment	1990–1995	Realisation of unused ice utilisation and collaboration system established
3 Growth	1996–2015	Both creating more value and increasing name recognition effectively
4 Maturity	2016–now	Stable management and contribution to winter regional development

Notes Based upon Fukuyama (2021).

value of snow and ice and develop ICEHOTEL can also be classified into four phases (Table 2).

During phase 1 (Dawn: 1980s), the exploration of using snow and ice from Torne River in severe winters was actively started at an individual level, with the pursuit of new business ideas. The connection with Hokkaido showed that the time of realising this possibility was sufficiently ripe.

As mentioned above, although Bergqvist and others were contemplating a winter business creation, it was common for locals to think that winter was nothing but darkness, coldness, and snow. Nevertheless, in 1987 and 1988, Bergqvist made two important journeys, choosing winter destinations like Alaska, Canada, and Japan, to seek new business ideas. When visiting Hokkaido in Japan, he had a chance to experience the 38th Sapporo Snow Festival. There, he was impressed by seeing huge snow sculptures that fascinated many tourists. Inspired by this, he began to pursue the possibility of events that took advantage of Jukkasjärvi's individuality. In 1989, Bergqvist held a symposium back in Kiruna, together with the Society of Snow and Ice Sculptors, inviting two Japanese ice sculptors from Asahikawa, Hokkaido. There, they carved ice and made a beautiful bear and an eagle which impressed the local audience.

In phase 2 (Establishment: 1990–1995), the momentum for the resource utilisation of snow and ice

were cultivated, leading to the idea conceiving of the world's first ice hotel. In 1990, a journalist, Granlund, together with Bergqvist and a construction master, Notström, built a big cylinder-shaped igloo called 'Arctic Hall,' a wordplay on 'Arctic' and 'art,' as they exhibited some art inside. One day, acquaintances of the company owners attending a conference asked to stay in Jukkasjärvi; however, the accommodations were fully booked. Spontaneously, the company set up a trial lodging at this art exhibition igloo with thick sleeping bags and reindeer skin prepared on the benches inside. All guests spent the night without any problems and eventually, this incident became the birth catalyst for the ICEHOTEL. In 1992, the first ice church was built and in 1994, two key persons joined the company: Bergh, in charge of art and design, and Larsson, responsible for the construction. Soon, the first ABSOLUT ICEBAR was created in the hotel, and since then, ICEHOTEL has been disseminating the style of drinking colourful cocktails in transparent ice glasses at this ice bar to media, aiming to build a brand image.

Thus, in this phase, the new value of 'a hotel where guests can stay in ice rooms' which no one had imagined as commercial hospitality services before, was created. In addition, a personnel system with collaborators was established to improve the value of ICEHOTEL.

The characteristic of phase 3 (Growth: 1996–2015) is that the value creation through expanded hotel functions and tourism services, as well as a wide variety of snow and ice usage, were initiated. The added value was disseminated globally through media and the name recognition of ICEHOTEL was effectively improved. Significant science and technology developments also took place.

Firstly, Bergh and Larsson made a huge glacier ice cave for the movie *Smilla's Sense of Snow*, by discovering a mixed product called 'Snice' with an optimal balance of snow and ice for building material. Then, in 1998, they also invited professor Fransson, colloquially called 'Ice Professor,' from Luleå University of Technology. He visited Jukkasjärvi and demonstrated scientifically a structural strength and safety analysis of ICEHOTEL. This university has a programme of

		Approach	
		Creating Value	Sharing Value
Domain	Local Culture	Drift Ice painting, Festival, etc.	Sunday painting class, etc.
	Drift Ice	Cultural Branding	Cultural Marketing
	ICEHOTEL	Ice bar, church, theatre, etc.	Fashion runways with global brands, etc.
	Natural Science & Technology	Food chain from ice algae, etc.	Northern International Symposium, etc.
	Drift Ice	Scientific Branding	Scientific Marketing
	ICEHOTEL	Structural strength by professor	University program of engineering

Figure 5 The Mechanism of Promoting Utilisation of Unused Resources

snow and ice architectural engineering, and there are some research papers on ICEHOTEL such as the experimental measurements on compressive strength of snow (e.g. Lintzen, 2012). Further, in 2002, an ice theatre was completed in ICEHOTEL, and a Sami version of Shakespeare's *Hamlet* was performed. ICEHOTEL has, through the years, cooperated with several global brands, for example, Absolut, Vogue, and Chanel. It has extended its brand awareness through publicity stunts, including ice being transported to Africa and Parisian fashion runways, to give some examples. In this way, ICEHOTEL has gradually increased its popularity, and thus, excellent ice sculptors from all over the world began to gather in Jukkasjärvi to design ice rooms.

In phase 4 (Maturity: 2016–current time), 'ICEHOTEL 365' was finally completed in 2016. This new hotel can provide year-round experience services with ice sculpture rooms and an ice bar, and a solar power generation system has also been installed to keep the inside always cold. In addition, in 2018, ICEHOTEL was certified to meet the sustainable ecolabelling standard called 'Nordic Swan Ecolabel.' Here, in the first place, the basic idea of ICEHOTEL is built on the premise of an environmental cycle, borrowing snow and ice from Torne River in winter and returning them in spring as they melt.

Thus, the growth of ICEHOTEL and its maintenance of attracting tourists from all over the world have led to the maturation of winter tourism-based regional development in Kiruna.

Discussions with Synchronic Analysis

Commonalities and Differences of Promoting Resource Utilisation between two Cases

This study firstly examined the process of resource utilisation chronologically in a macro-perspective. This was based on our collected research data: from the analysis of the literature review, on media sources, as well as from extensive fieldwork in both regions, including the empirical analysis of semi-structured interviews and participant observations. Furthermore, from a micro- and meta- perspective, the collected data, especially about local endeavours, can be analysed synchronically to highlight the different fields and functional approaches, and to consider the utilisation process of unused resources. The local endeavours in both regions aimed at enhancing the value of snow and ice can be firstly divided into the domains of 'Local culture' and 'Natural science and technology.' In addition, they can simultaneously be divided into two different approaches, which are 'Creating value' and 'Sharing value.' In this regard, it was found that the mechanism for promoting the utilisation of snow and ice was represented by four quadrants (see Figure 5).

On the one hand, examining endeavours by local stakeholders in each case, such as Murase's paintings and Tanaka's activities on drift ice, or ice sculptures and the ice theatre in ICEHOTEL by Bergh and Larsson, these belong to the domain of 'Local culture' which is unique to the north. The cultural activities such as drawing drift ice, arranging festivals, building an ice church or an ice bar, and making ice glasses,

are creating useful value from previously unused snow and ice. Furthermore, the added value of snow and ice was shared first inside communities, then outside the region, by the activities such as painting classes, art exhibitions, or dissemination through media, fashion shows, and as a movie stage.

On the other hand, various research activities on drift ice by Aota, or the structural integrity of 'Snice' developed by Bergh and Larsson, and demonstrated by Fransson, are considered to create value in the domain of 'Natural science and technology.' Similarly, by arranging the Northern International Symposium related to drift ice, or even the snow and ice architectural engineering programme at university, the added useful value of snow and ice has also been shared widely in society through the scientific perspective.

In this way, creating value in the domain of local culture is 'Cultural Branding,' and sharing its value in this domain is 'Cultural Marketing.' Fukuyama and Shikida (2019, p. 71) defined them as 'the attempt to enhance value by creating various opportunities to enjoy human pleasure or well-being through culture,' and 'to share the function, which can satisfy the above cultural desires, and their positive evaluations, widely with society.' Similarly, Aoki (2008) suggested the effectiveness of brand building through culture and culturally inspired marketing, mentioning culture as an 'unconscious forcible power.' In Hirano's (2000) words, the 'ingenuity for people's lives' formed while adapting to each regional condition can be called culture. Furthermore, Zimmermann (1985, p. 241) comprehensively suggested, 'It is culture that permits man [sic] to inhabit every continent, to exist in the tropics and in the frigid zones.' Thus, these ideas related to culture explain that even in disadvantageous regions in the north, local people can make positive use of snow and ice, and hence, they support the usefulness of cultural approaches in the above mechanism of promoting utilisation.

In the same way, creating and sharing value in the domain of natural science and technology are 'Scientific Branding' and 'Scientific Marketing,' which are defined as 'gaining the trust of society through science and trying to justify value,' and 'sharing value justified by scientific proof with society widely' (Fukuyama &

Shikida, 2019, p. 71). Regarding these aspects, not only is natural science and technology expected to provide truth, but it is also required to have a role of providing 'legitimacy' in social decision-making (Fujigaki et al., 2020). Zimmermann (1985) stated that scientific methods and principles would realise a 'safe and stable' human society with their 'continuous application.' Hence, it can be indicated that the usefulness of scientific approach involves, for instance, the function of justifying negative objects against community perceptions. Thus, the above mechanism requires a scientific approach, which proves principles that can dispel anxiety and uncertainty. Furthermore, together with the earlier mentioned usefulness of the cultural approach by Aoki (2008), this study suggests that the process of this utilisation also requires the usefulness of scientific approaches such as evaluating positive proof and sharing its scientifically demonstrated value.

Thus, it was verified that the factors which promoted the utilisation of unused snow and ice are the coexistence of both cultural and scientific effects contained in the approach function of value formation. In other words, the two approaches of value creation and value sharing were effective because they were practiced without fail in both domains of culture and science. Consequently, it can be considered that these approaches in two domains have been interacting to create the synergistic effect for promoting resource usage.

On the other hand, there are differences between the two cases. In the mechanism of promoting snow and ice utilisation for ICEHOTEL, it was confirmed that the scientific approach was noticeably less than in the case of drift ice. In Mombetsu, there have been many approaches to create and share the scientific value by local stakeholders, especially by Aota and others. This is potentially because drift ice had more negative properties which were harmful to the region than the snow and ice on Torne River. Hence, it can be hypothesised that ordinary unused resources such as the snow and ice in Jukkasjärvi are promoted in the process of utilisation with a less scientific approach than negative unused resources.

In this way, it should be valid to indicate that the usefulness of the scientific approach is greater where negative properties occur. A scientific approach, con-

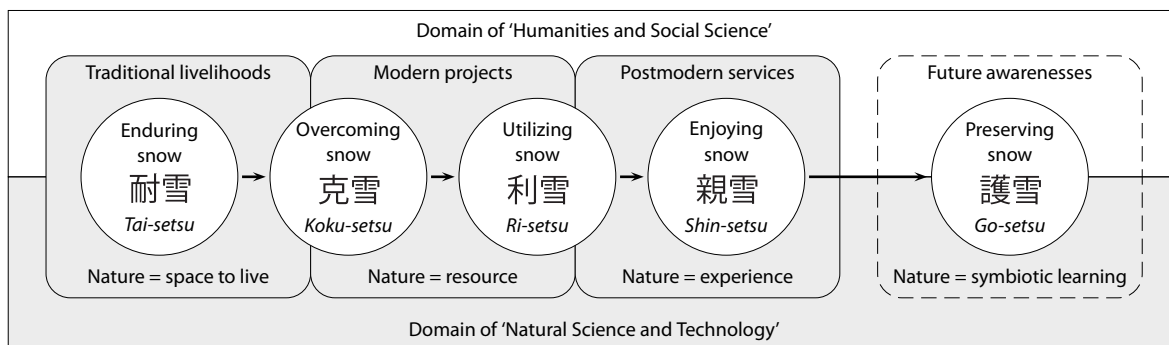


Figure 6 Preferred Future Change in Relationship between Humans and Nature

taining the principles or truths that can dispel anxiety and disadvantages, contributed to the demonstration of something uncertain.

Integrated Considerations toward a New Derived Concept

Our study has examined regional development with resource utilisation at the meso (including micro) level. Additionally, it ultimately considers the significance of value enhancement at the macro level, namely the significance related to global warming countermeasures. We have been discussing the value enhancement of snow and ice by tourism utilisation through the synergistic effect of culture and science. Furthermore, we examine the possibility that the value-enhancing effect of snow and ice can help humans to cultivate the consciousness to preserve snow and ice, and thus contribute to the spread of this recognition.

One source of this expectation is the Okhotsk Drift Ice Trust Movement, which aims environmentally at preventing global warming with a concept of preserving drift ice, which is decreasing in Hokkaido. It certainly seems that such movements have been cultivated to become the regional practice by enhancing the value of drift ice, which was once a negative unused resource, and turning it into a tourism resource. Moreover, in the Arctic region including Kiruna, the thawing and decrease of snow and ice due to climate change are already in a remarkably serious situation in the mid- to long term.

Under these circumstances, the continuous challenge of creating snow and ice tourism will enable

more tourists living on this earth to widely recognise the attraction and value of them through their experiences and learning. And it is possible to expect that humans who enjoy the value of snow and ice may develop awareness of mitigation measures to preserve them from climate change gradually and globally. Taking this possibility as the macro level significance of developing unused snow and ice for tourism in the North, this comparative study consequently shows a new concept of 'Go-setsu (preserving snow),' a new step after 'Shin-setsu (Enjoying snow),' as a future phase based on all the above considerations of relationship between humans and nature (Figure 6).

In this regard, nature will be, or already is, a space to learn about such serious influence of the climate change in a northern context. Here, snow and ice in nature could be new types of experiences such as 'snow and ice ecotourism' or 'study tourism,' where tourists can learn the serious situation that thaw means to the north. Furthermore, it is considered that nature is no longer a limited place where humans can face this type of symbiotic learning opportunity, but rather, a much wider area on northern Earth, including the Antarctic, as the holistic matter of humans and snow and ice. Thus, it can be considered that the role of snow and ice tourism development is cultivating peoples' awareness of nature preservation, and snow and ice, in the future. In addition, this idea can be proposed only through the value enhancement of snow and ice by the synergistic effect of both regional culture and natural science and technology based on the above resource theories adopted in this study. Hence, this is

the derived significance from this study in the combination of both Japanese and Northern European academic approaches.

Conclusion

This study examined the process of utilising unused community resources, snow and ice in northern regions, through the comparative analysis of drift ice in Hokkaido, Japan and ICEHOTEL in Swedish Lapland, based on theoretical frameworks of resources, and underlying marketing principles. For a start, endogenous endeavours by locals in both cases are chronologically divided into 4 phases: the periods of Dawn, Establishment, Growth, and Maturity. Then, synchronically, these are classified into, firstly, two domains of 'Local culture' and 'Natural science & technology,' and also into two different approaches, creating value and sharing its value. Thus, the mechanism of promoting the utilisation of unused resources is shown as four quadrants, named 'Cultural branding,' 'Cultural marketing,' 'Scientific branding,' and 'Scientific marketing.'

In this process of utilising snow and ice, it can be considered that the synergic effect from both usefulness of culture and science is working interactively. And lastly, regarding the historical changes between humans and nature enhancing the value of snow and ice, the synergic effect of Japanese and Northern European approaches derives a new concept of 'Go-setsu (preserving snow)' with a new type of nature experience in global climate change. Thus, this comparative study shows us the significance of considering one's present situation and future, which are focused on positive possibilities of overcoming challenges in the north.

Finally, as this study has attempted to clarify the resource utilising mechanism and all its associated issues, let us therefore now turn to some limitations and future challenges in this field. Since resource studies are not commonly discussed on a global scale yet, this academic field requires more analytical case studies of utilising snow and ice as tourism resources. Our case studies lay a foundation, but naturally only function as a symbol for other initiatives in different geographical locations, not acting in a generalising way. It would be beneficial if more empirical case studies would be

accumulated in both deductive and inductive ways in the future, based on the critical discussions toward our proposed model for the resource utilising mechanism.

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