Tourism

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8. Tourism

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Key messages

- ***The Arctic tourism industry has been growing rapidly over the past decade, in part because of climate change.*** *Reductions in sea ice related to climate change have facilitated increased and reliable access to parts of the Arctic that were difficult to reach in the past. The allure of these newly accessible regions to tourism adventurers has increased tourism demand, including that related to a niche market segment of tourists motivated to see the region before it changes forever.*
- ***The tourism industry in the Baffin Bay/Davis Strait (BBDS) region is generally expected to be a beneficiary of the impacts of climate change, but anticipated risks must also be managed.*** *Increased demand for Arctic tourism experiences will bring economic and employment opportunities to the region, which will be particularly beneficial to smaller hamlets and communities where unemployment and poverty rates are high. However, without proper management and industry support, any climate-induced increases in tourism activity could bring negative impacts to the region, including high economic leakage, social and cultural impacts, and environmental disasters.*
- ***Lack of sufficient infrastructure, such as large airports and harbor facilities, and distances between settlements are major constraints for tourism development.*** *The remoteness of the BBDS region from major urban centers is attractive to tourists who wish to engage in a tourism escape, but it is also limiting, given the distance, time, and costs associated with travel to the region. Areas that invest in physical and communications infrastructure will benefit the most from any increase in tourism demand in the BBDS region.*
- ***The most significant impacts for tourism will happen in areas where government seizes new opportunities for strategic development.*** *Climate change will present increased opportunities for tourism, but melting sea ice and changing temperatures alone will not facilitate a sustainable and prosperous tourism industry. Strategic development that aims to mitigate the negative implications of climate change while enhancing the opportunities will be essential.*
- ***In the BBDS region, the marine areas remain highly hazardous for navigation, and so increased investment is needed in charting, ice-monitoring research, and multi-use infrastructure.*** *Climate change has caused a rapid decrease in sea ice extent across the BBDS region, and these newly accessible areas have not all been charted properly. In addition, tourism vessels, including cruise ships and yachts, are the most likely vessel type to travel off the main shipping routes (i.e., compared to cargo ships, tankers, or resupply barges), in search of marine wildlife, pristine and remote natural environments, and icebergs. Thus, tourism vessels represent the highest safety concern of all vessel types operating in uncharted waters.*
- ***In accord with best practices worldwide, it is important that the tourism industry be developed in close consultation with local communities to ensure strong local involvement.*** *The strongest tourism economies globally are the ones that have been developed by and with local communities and that benefit local residents. Supporting local BBDS-based outfitters and entrepreneurs (and joint ventures) should be prioritized over supporting externally owned and operated businesses that leave limited benefits in communities.*
- ***Increased multilateral collaboration between Canada and Greenland could make it possible to take advantage of transnational business opportunities.*** *The vast majority of cruise expeditions transit the BBDS region and include stops in both Greenland and Canada and thus there are significant economic and socio-cultural opportunities associated with multinational collaboration. Furthermore, current flight patterns between Greenland and Canada often route passengers via Europe or southern Canada. Development of modern air infrastructure in the region could significantly enhance transportation and tourism businesses as more and more transatlantic flights could be routed directly through the BBDS region instead of through mainland Europe and Canada.*

Guiding questions

What is the history of tourism development in the Baffin Bay/Davis Strait region, and what are the major industry trends?

What are the likely impacts of climate change on the tourism industry now and in the future?

What are the opportunities and risks associated with climate and tourism changes in the region?

Which adaptation strategies might be needed to support tourism development, enhance opportunities, and reduce risks?

Introduction

Increased access to the Arctic, stemming from climate change and related sea ice reduction, has resulted in major developments in both land- and marine-based tourism opportunities. Expedition cruise ship traffic in the Baffin

Bay/Davis Strait region increased steadily between 2000 and 2010 and has seen variable growth and decline over the last seven years, while pleasure craft (i.e., sailboats and motor yachts) have shown continuous increases over the same time period. Despite these climate-related increases in tourism activity in the region, the overall numbers of marine and related land-based tourists still remains low compared to other global areas (Johnston et al., 2016; exactEarth, 2016; Statistics Greenland, 2016; Dawson et al., 2017a). In the BBDS region, Greenland may be well positioned to take advantage of near-term changes in accessibility because of a strong tourism foundation and infrastructure investments developed over the past 30 years. Nunavut is at an earlier stage of tourism-strategy implementation but is also poised to take advantage of tourism growth. Regardless of national differences in stage of development, conditions in the region as a whole present tourism opportunities and risks that are likely to arise from the direct and indirect impacts of climate change. This chapter describes these opportunities and risks by providing the historical context of tourism development and outlining the major trends, exploring the impacts of climate change and their relationship to other tourism drivers, outlining possible developments in tourism in response to climate change impacts in the near-term and longer-term futures, and presenting possible adaptation strategies to enhance opportunities and reduce risks. Major findings relate to infrastructural and other capacity issues in the region; the need for investment in marine services, sector regulation, and monitoring; the importance of community-led initiatives and local entrepreneurship; and the importance of multilateral collaboration in the region.

8.1 State and characteristics of tourism activity in the BBDS region

8.1.1 Historical development of tourism in the BBDS region

It was once thought that the Arctic, with its high cost of ice-breaking and elevated risks due to remoteness and harsh weather conditions, would forever remain off the list of popular tourism destinations (Ritter and Schafer, 1998; Jones, 1999; Stewart and Draper, 2006). However, due to a general trend of increasing amounts of disposable income and a desire to travel to remote and exotic locations, coupled with the sudden availability of former Soviet Union icebreakers retrofitted for tourism, the Arctic has shifted from being off the beaten path to being very much on it (Stewart and Draper, 2006; Nuttall, 2013). Climate change has further influenced continued growth in tourism, as changing landscapes and a media focus on climate change impacts attract visitors to the region and as, importantly, sea ice reductions make it increasingly possible to travel there by sea. As a result, tourists now represent the single largest human presence in the Arctic (Arctic Council, 2009; Lamers and Amelung, 2010; Stonehouse and Snyder, 2010). However, the distribution of tourists (demand) and tourism opportunities (supply) vary across the global Arctic, with Alaska (United States of America, USA) and certain regions of the European Arctic (e.g, Svalbard, Norway) attracting the highest numbers of visitors.

A smaller but still growing Arctic tourism industry has developed in the BBDS region and is helping to diversify the historical reliance on resource extraction sectors, which have been more dominant historically. Tourism is often promoted as having an important role in economic development and diversification, and this sector may contribute to curbing the negative impacts of a boom and bust cycle in areas where resource-based economies are in decline or are in flux, such as in the case of the BBDS (see Chapter 7; Milne, 2006; Müller and Jansson, 2007; Hall and Saarinen, 2010; Moksness et al., 2011). Furthermore, tourism is viewed as a valuable economic driver in Indigenous regions, providing an opportunity to share culture with visitors from around the world and enabling local people to be employed on a seasonal basis while also allowing time to engage in traditional cultural activities (SEDSG, 2003). Tourism, nonetheless, can present economic, social, and environmental challenges for Arctic communities and governments, and it must be managed carefully to ensure that it brings the desired benefits without also bringing unacceptable costs.

The BBDS encompasses West and Northwest Greenland, where tourism development occurs largely via regional strategies and national oversight, and a portion of the Canadian territory of Nunavut, where tourism development is largely a territorial responsibility with community-level participation. Despite the existence of two state authorities, the two jurisdictions in the BBDS region have experienced a relatively similar history in terms of tourism development, albeit at different time periods and scales. The most significant differentiating factor between the regions has been the scale of development and infrastructure, which is much more advanced in Greenland (see further details in Chapter 10). The region as a whole is known for its highly attractive landscapes of fjords, mountains, and glaciers, its historically important role as the entrance to the Northwest Passage (NWP), its wildlife-viewing opportunities, and its traditional communities that showcase Inuit culture. As a result, both jurisdictions offer similar tourism attractions, including unique natural and cultural features that are particularly attractive to tourists. Both countries have produced economic development strategies and reports for the region, identifying tourism as an industry with "great potential" and "primed to become a leading sector" in the region (SEDSG, 2003; CGMRBS, 2014). However, tourism is an inherently fickle and adaptive industry that is shaped largely by what might seem to local actors to be uncontrollable external factors, such as changing tourism demand, global financial influences, company resourcing decisions, and opportunities in other markets. As such, tourism is a challenging industry to manage. The historical ups and downs of tourism development in the region are likely to continue in an era of increased uncertainty due to climate change. Yet, with appropriate adaptation strategies in place, many of the negative impacts of change can be mitigated while the opportunities are capitalized upon.

Until the mid-1950s, tourism was barely considered in Greenland and was unheard of in eastern Arctic Canada. For example, until 1953 (the end of the colonial period in Greenland), one needed official sanction to enter Greenland and so the country was essentially closed to visitors except those working in administration, the military, construction, or on polar research. Furthermore, the region was not well

known to the outside world (Pelt, 2009). A focus on tourism development increased in 1975 when the Danish Ministry of Greenland published a report titled *Tourism in Greenland*, which described and mapped out the potentials for a tourism industry (Rosing, 1973). After the introduction of Home Rule, Greenland experienced an economic recession, primarily because of declining income in the fishing industry. The economic downturn left Greenland with a growing debt and a need for a new economic driver. Diversification of the economy was now a policy goal, and various development measures were introduced, such as trying to stimulate new sectors (e.g., minerals and tourism). The Home Rule Government of Greenland again believed that tourism could become a leading industry.

An official tourism plan for Greenland was established and adopted in 1991 (Hoff & Overgaard, 1991). In 1992, the agency Greenland Tourism (Grønlands Turistråd) was created and supported by the government (Lyck, 1998). Greenland Tourism was given the responsibility of developing, coordinating, and promoting tourism and marketing Greenland as a destination. The efforts of Greenland Tourism to develop the fast-growing tourism industry were supported by regional and local tourism agencies that played a key local coordination role (Johnston and Viken, 1997). The tourism sector has evolved significantly since it was touted as a key focus in regional economic development plans, but this development has not been without difficulties and subsequent reorganization and new approaches to planning and investments (Tommasini, 2011). In the mid-1960s, Greenland received about 500 visitors a year, which increased to about 6,500 per year by 1972 (Rosing, 1973). There was a drop in tourist overnight stays in Greenland in the mid-1980s, with a rebound in the 1990s (Johnston and Viken, 1997; Tommasini, 2011). By 1994, there were about 8,000 visitors per year, which grew to 15,000 by the mid-1990s (Møller and Nielsen, 2006). However, the actual number of visitors was likely much higher than these official statistics, considering that at this time annual totals did not include excursionists – those who did not stay overnight, such as the more than 6,000 cruise ship tourists and 4,000 Icelandic day visitors in 1995 – and school children on field trips from Denmark (approximately 2,000 in 1995) (Johnston and Viken, 1997). Today, there are approximately 70,000 visitors annually to Greenland (the BBDS population is approximately 53,000), including day, overnight, and cruise visitors (Statistics Greenland, 2015). Importantly, concerted infrastructure development (i.e., accommodation facilities, airstrips, and ports), marketing of tourism opportunities, national policies to reduce taxes on transport, and new direct flights to Iceland have been highly successful and have contributed significantly to the increase in tourism in Greenland, although additional development is still needed to expand further (Government of Greenland, 2016) (also see below).

On the Nunavut side of the BBDS region, tourism also had a slow start but was flagged in the 1980s as a means of creating important local Inuit economic activity through a community-based tourism planning effort (Robbins, 2007). This initiative began with a pilot project in Pangnirtung, a Baffin Island community with a mixed economy that had been hit hard by a decline in fur prices, thus making hunting uneconomical and affecting the livelihoods of many people in the 1970s and 1980s (Robbins, 2007; Snyder and Stonehouse, 2007). Tourism development in the region has also been connected to the establishment of protected areas, with a particular emphasis on providing opportunities for local communities to develop economic activities (Hall and Johnston, 1995). Despite enthusiasm in the 1980s for tourism development, only a few communities maintained this early momentum, and the 1990s have been viewed as a decade of stagnation in terms of investment in the industry (Robbins, 2007). Advances were made on the organizational side with the creation of Nunavut Tourism in the mid-1990s, an industry membership organization that was given responsibility for marketing, product development, and tourism training in eastern Arctic Canada. When the territory of Nunavut officially came into existence in 1999, the territorial government retained planning, licensing, and enforcement (Robbins, 2007). A key limitation for tourism development on the Nunavut side of the BBDS region is a lack of infrastructure and the fact that the region consists of a number of islands accessible only by air or sea. Furthermore, there is a lack of port facilities and only a limited road network, mostly of gravel or dirt. The airstrips are typically gravel and cannot support larger, fuel-efficient airplanes (Chapter 10).

An attempt at strategic tourism planning for Nunavut began with a 2003 report titled *A Strategic Plan for Tourism Development in Nunavut* (Robbins, 2007). Tourism at this time was seen as "*a good fit for Nunavut culture and communities*" (SEDSG, 2003, p. 16) and was viewed as supporting Inuit culture and providing opportunities for more stable, community-based economic activity than the dramatic boom and bust cycle experienced in resource extraction industries (SEDSG, 2003). Indeed, after the 2002 closure of the Nanisivik mine (once Nunavut's major mine project), tourism was thought to be the territory's "*single most important economic activity in the private sector, in terms of its contribution to the Territory's GDP*" (SEDSG, 2003, p. 16). Subsequent reports, including regular "Nunavut Economic Outlook" papers, have been published, recommending diversification of the region's economy through tourism (Nunavut Economic Forum, 2010). Despite these efforts, no official tourism sector strategy was created for Nunavut until 2014, and sector development proceeded on an ad hoc basis, relying on the marketing and training activities of Nunavut Tourism, the product development of the industry itself, and community willingness to participate. Work began on an official tourism sector strategy in 2011, comprising extensive community consultation activities, survey research, and collaborative decision-making among various government and non-government agencies (Viken et al., 2014). The official strategy is now in place, and actions are being implemented (Government of Nunavut, 2013), including the development of the Nunavut Marine Tourism Management Plan (Johnston et al., 2016). Approval of the official tourism strategy by the legislature is important, given recent and rapid increases in tourist demand. Hinch (1995) noted 1,280 summer pleasure visitors in the Qikiqtaaluk region (formerly called Baffin Region) in 1979, growing to 2,740 in 1988, while Johnston (1995) reported 4,100 visitors for the Qikiqtaaluk region in 1992. Historical data on the Canadian side are limited and difficult to compare due to inconsistent collection methods.

However, it is clear that tourism growth began much later than in Greenland and has also been much slower. The Nunavut territory as a whole, which as of July 2015 had a population of almost 37,000 (Nunavut Bureau of Statistics, 2015), hosts just over 30,000 tourists annually, including both pleasure and business visitors (Nunavut Tourism, 2011).

Establishing a reliable and sustainable tourism economy in the BBDS region has been challenging. Various research and consulting reports over the years have identified significant historical challenges to development in the region, including the following: high seasonality and short summer season length; limited human capacity; limited access to markets and sometimes to finance; limited tourist spending in some communities (~50 Canadian dollars, CAD, per day in Nunavut); high economic leakage to external owners; high cost of access for tourists; lack of online information about the destinations; poor Internet communication services in some places; and poor coordination within the tourism sector in Nunavut (see Johnston, 1995; Johnston and Viken, 1997; Lyck, 1998; Robbins, 2007; Nunavut Tourism, 2011; Dawson et al., 2014.) These challenges are accentuated in smaller settlements compared to larger towns, which have larger pools of trained professionals and high-speed Internet (Rambøll Group, 2014). Recent concerns have been raised about the effects of perceived over-regulation in Nunavut and the unintended impacts of federal shipping legislation as factors that might both hinder cruise tourism in Nunavut and contribute to its increase in Greenland (Dawson et al., 2017b). Furthermore, concerns about the potential for negative impacts of tourism on local people and the environment have remained high, despite the potential and evident positive impacts.

8.1.2 Current tourism trends in the BBDS region

Wide ranges of tourist activities are now on offer across the BBDS region, similar to what is typically available across the Arctic – although at a smaller scale than in Alaska or Svalbard, for example. A total of 33 different activity types are advertised as being on offer to tourists in the BBDS region, including hiking, mountaineering, rock climbing, kayaking, snowmobiling, ski touring, scuba diving, dog sledding, wildlife viewing, glacier and landscape tours, overflights, northern lights, Norse and Inuit history tours, historic and archaeological sites, sport hunting, river and sea fishing, expedition cruising, and yachting (see Table 8.1 and Figure 8.1). The peak season for tourism is summer (July and August). The main season for marine tourism runs from mid-July to late August, and sometimes into September in years when navigation is facilitated by higher-than-average ice melts and late freeze-ups. Land-based tourism has three main seasons: summer, autumn, and winter. The main season is shorter when sea ice conditions are difficult or when weather becomes unstable (see INTAARI, 2012). Although not as popular, the shoulder (i.e., autumn and spring) and winter seasons also attract some tourists for activities such as ice floe tours, wildlife viewing, cultural activities, snowmobiling, ice fishing, and hunting. Most of the activities on offer are highly reliant on the natural environment and so are significantly influenced by the impacts of climate change.

Although both land- and marine-based tourism are growing in the BBDS region, increased demand for cruise ship travel has garnered the most attention and is most closely related to climate change because of the reductions in sea ice and resultant

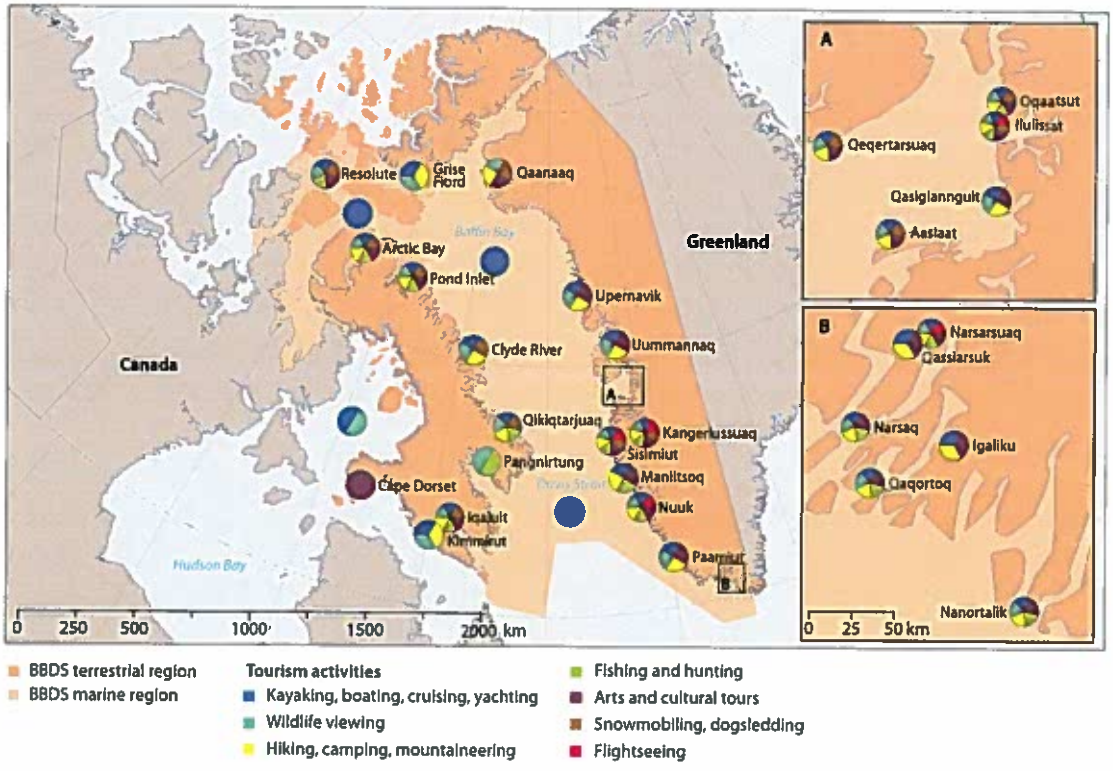


Figure 8.1 Map of tourist activities in the BBDS region (information compiled by J. Dawson).

Table 8.1 Advertised tourism activities in the circumpolar Arctic and the BBDS region (compiled from websites of the national, territorial, provincial, and state tourism authorities).

Country/area	Kayaking or rafting (river and sea)	Wildlife viewing	Cultural heritage tours	Diving and snorkeling	Zodiac and sailing tours	Hunting and fishing	Fjord cruises	Northern lights	Cruise and yacht tours
Russia	×	×	×	×		×			×
Finland	×	×		×	×	×			×
Norway		×	×	×	×	×	×	×	×
Iceland	×	×		×		×	×	×	×
Alaska (USA)	×	×	×	×		×		×	×
Canada North	×	×	×		×	×		×	×
Greenland	×	×	×	×	×	×	×	×	×
BBDS region	×*	×	×		×	×	×	×	×

* Sea kayaking only

increase in marine access (Chapter 9). As seen in Figure 8.2, the number of commercial cruise ship arrivals in the BBDS region more than doubled between 2005 and 2007 and has since increased and decreased over time due to the global economic crisis, regulatory changes, business mergers, and other global socio-economic trends (Arctic Council, 2009; Stewart et al., 2010; Dawson et al., 2014). Pleasure craft (i.e., yacht and private boat) traffic has also grown in recent years, along with access and awareness (Pizzolato et al., 2013; Johnston et al., 2013, 2016). Popular routes for marine tourism include the Northwest Passage and the West Greenland coast, including the world-renowned Ilulissat Icefjord, a UNESCO (United Nations Educational, Scientific and Cultural Organization) World Heritage Site (Marsh and Staple, 1995; Jones, 1999; Stewart and Draper, 2006).

The first transit of the NWP by a cruise ship (the purpose-built expedition cruise ship *MS Explorer*) occurred in 1984 (Marsh and Staple, 1995), and since the early 2000s, expedition cruise vessels have traversed the NWP annually with only occasional summertime ice challenges. Cruise ships carrying tourists from the USA and France were first officially observed in Greenland around the 1930s. However, more organized tourist travel to Greenland began only in 1959, with flights from Copenhagen and one-day tourist flights from Iceland (Thalund, 2000). Today, over 35,000 cruise tourists and several thousand yachters visit the BBDS region annually. Greenland and Canada attract a similar number of cruise vessels each season, yet the number of tourists visiting the Greenland portion of the BBDS (approximately 22,390 tourists by ship and 45,486 tourists by plane in 2015) is significantly higher than tourists to the Canadian side (approximately 6,000 tourists by ship and an estimated 25,000 by plane in 2011) (Statistics Greenland, 2009; Stewart et al., 2010; Nunavut Tourism, 2011; Dawson et al., 2014). The difference in numbers is due both to the size of the vessels that local infrastructure can accommodate and to Greenland's successful destination-marketing and tourism coordination. Importantly, a majority (approximately 70%) of cruise vessels visiting the Canadian side of the BBDS region begin their voyage from Ilulissat in western Greenland, spending 2–3 days there before traveling to Canadian waters, where they spend 7–15 days.

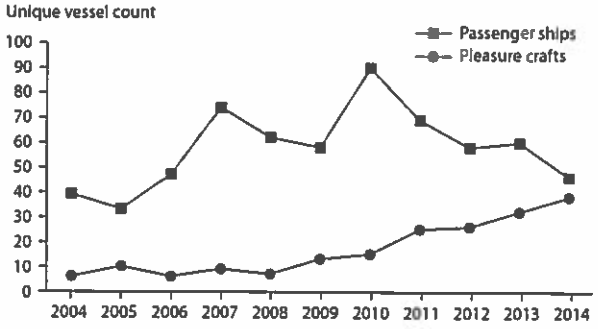


Figure 8.2 Vessel trends in the BBDS region: passenger ships and pleasure crafts, 2004–2014 (from database discussed in Pizzolato et al., 2016, and Dawson et al., 2017a).

In terms of spatial trends, tourism vessels regularly travel within the entire BBDS region, typically moving from east to west. An aggregated analysis of traffic volume from 1990 to 2013 indicates that the greatest numbers of passenger vessels occurs along Southwest Greenland and the northern tip of Baffin Island (Lancaster Sound) at the eastern entrance to the NWP; pleasure craft are similarly concentrated (Figures 8.3 and 8.4). Time series analysis indicates a clear northward shift in cruise and yacht activity. This shift correlates well with changes in sea ice, which has been declining. Historically, multi-year ice has prohibited reliable transit, but in recent years, declines in sea ice extent and thickness have been shown to have directly influenced, at least in part, the increase observed in cruise and yacht traffic (Pizzolato et al., 2013, 2014, 2016; Dawson et al., 2017a).

Some communities are benefiting from tourism more than others. For example, Ilulissat in Greenland and Pond Inlet in Canada tend to benefit because of their geographic location (Pond Inlet, for instance, is at the eastern entrance to the NWP), their majestic landscapes (i.e., fjords, mountains, and glaciers), and, importantly, their development of tourism products, outfitters, and infrastructure (i.e., wharfs, performance centers, hotels) specifically designed to service the tourism industry. Other smaller communities tend to receive less of the local economic benefits. The distribution of tourism activity and development is certainly uneven and will require attention moving forward.

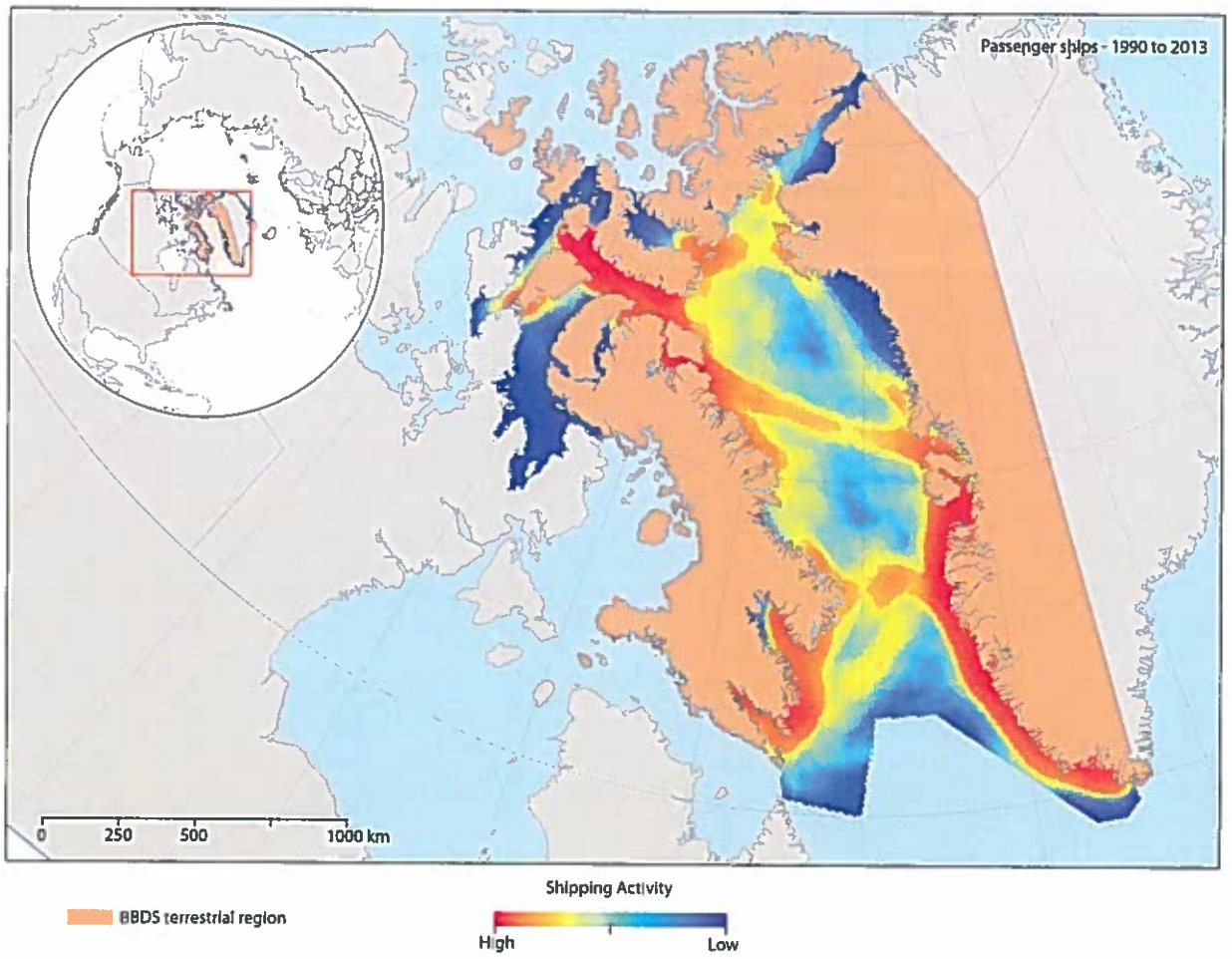


Figure 8.3 Map of the total volume of passenger ships in the BBDS region, 1990–2013 (data from NORDREG and Greenpost).

Tourists visiting the BBDS region tend to be between the ages of 40 and 65, are wealthy compared to national averages, are well educated, and are motivated to visit in order to experience the natural environment, Inuit culture, and amenities on offer. The vast majority of tourists visiting the Canadian side of the BBDS region are Canadian, followed by a smaller proportion of Americans and Europeans (Nunavut Tourism, 2011). The most common nationalities of visitors to the Greenland side of the BBDS region are western European, followed by Scandinavian, and American (Visit Greenland, 2013). Leisure visitors (land and cruise) tend to make up the largest proportion of travel to the region, although there are large numbers of business travelers who also tend to engage in leisure-type activities while visiting (Nunavut Tourism, 2011; Visit Greenland, 2015). In Greenland, approximately two-thirds of the tourism volume is land-based and one-third is cruise-based. However, in terms of spending habits, cruise tourists tend to spend the highest amounts on their visits (approximately CAD 7,500 in Nunavut). Land-based leisure travelers and business travelers tend to spend similar amounts (approximately CAD 4,500), while tourists visiting for personal reasons or to visit friends and relatives tend to spend the least (approximately CAD 1,800) (Nunavut Tourism, 2011). Comparable economic data are not available for Greenland.

8.2 The impacts of climate change on tourism in the BBDS region

Tourism is considered one of the most highly climate-sensitive economic sectors globally (UNWTO-UNEP-WMO, 2008; UNWTO, 2016). Many tourism destinations are directly dependent on climate or on environmental resources as their principal attractions – e.g., wildlife, glaciers, or landscapes. This dependence is particularly the case for the BBDS region, where tourists are highly motivated to travel to the area in order to experience the unique natural landscapes and view Arctic wildlife (see Figure 8.5). Given that Arctic environmental resources are extremely sensitive to climate variability (see Chapters 3 and 6), future environmental changes will lead to both challenges and opportunities for tourism activity in the region and will thereby affect the contribution of tourism to regional economic development. Indeed, climate change is not a remote event for tourism; the impacts of climate change, both positive and negative, are already evident at destinations around the world and are already influencing decision-making and governance decisions (Pagnan, 2003; Becken and Hay, 2007; Dawson et al., 2007; UNWTO-UNEP-WMO, 2008; Scott et al., 2016).

The specific impacts that climate change will have on the tourism sector and on local communities that rely, at least in part, on the tourism industry can be divided into two

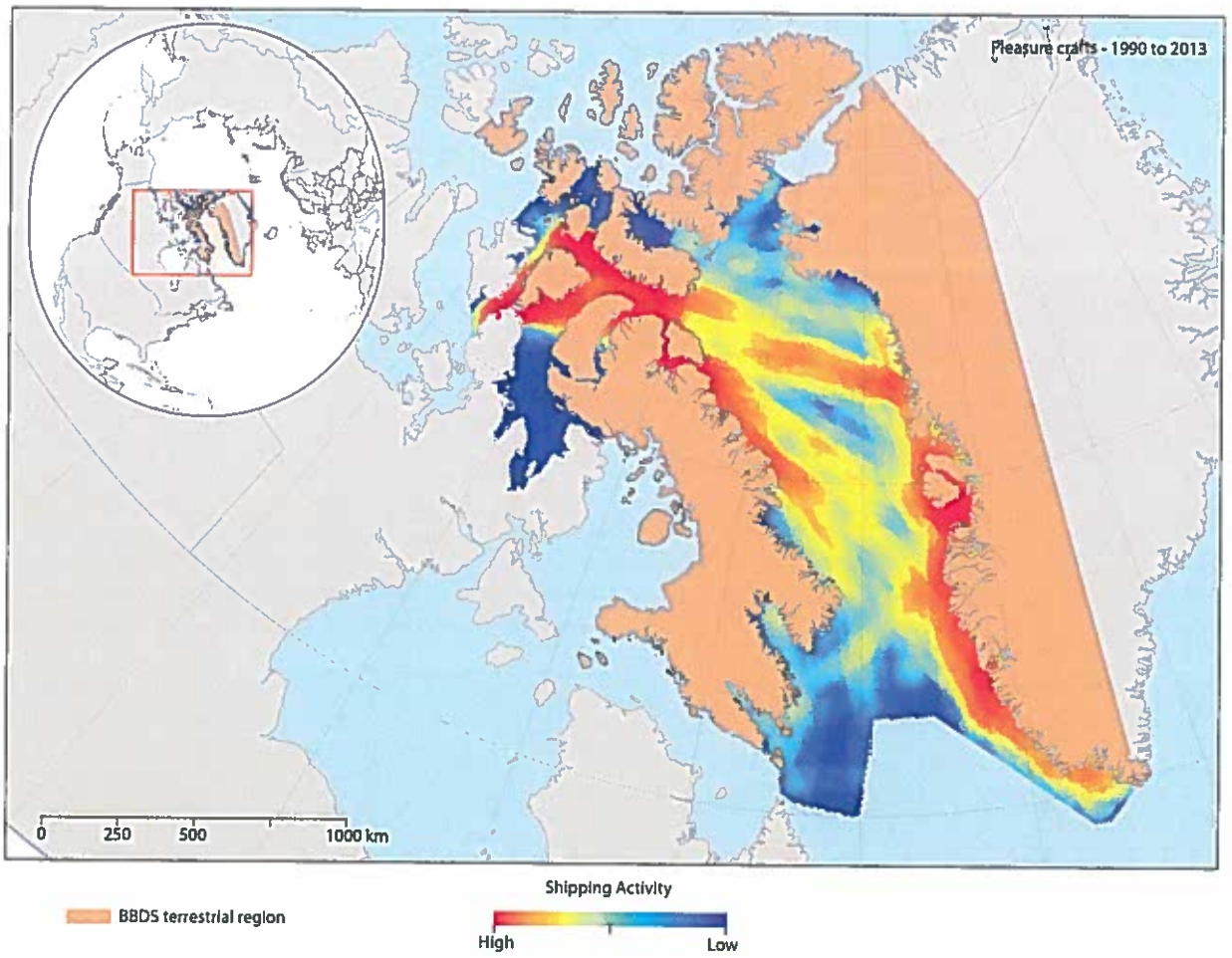


Figure 8.4 Map of the total volume of pleasure craft vessels in the BBDS region, 1990–2013 (data from NORDREG and Greenpost).

categories: direct impacts and indirect impacts (UNEP and the International Ecotourism Society, 2007). Importantly, the impacts of climate change, be they direct or indirect, can be positive or negative and thus can influence both opportunities and risks (see Box 8.1 for further details).

Within the BBDS region, changing climatic conditions offer a number of opportunities for both the tourism industry and the communities involved. For example, it is generally believed that the tourism industry is well positioned to be a beneficiary of climate change over the short term, considering the major role that a changing climate is continuing to play in increasing tourist demand (Dawson et al., 2007; Marquez and Eagles, 2007; Lamers and Amelung, 2010; Dawson et al., 2014). The opportunities associated with climate change for the tourism sector have been recognized in recent politically motivated advertising about Greenland's tourism development, which has been outlined as a strategic tool to achieve a more sustainable future for Greenland (Rambøll Group, 2014). In other words, despite challenges in the management, infrastructure, and legal framework in tourism (Government of Greenland, 2012), investing in the tourism sector has been framed as highly strategic as opposed to focusing all investments in the mining sector (Bjørst and Ren, 2015). Similar sentiments have been expressed concerning Nunavut (Government of Nunavut, 2013).

Demand is increasing, in large part, because of real and expected changes to environmental resources. For example, there has been an increase in the summer season length (Subchapter 3.1), which allows for additional tourism opportunities. The shoulder seasons are also lengthening, as weather during autumn and spring has become less harsh and more amenable to nature-based tourism. Given the climate-induced changes that have opened up shipping routes and created greater access to the marine environment, the Arctic region has experienced increases in cruise traffic and other marine shipping activity (Huebert, 2001; Pagnan, 2003; Brigham and Ellis, 2004; Hassol, 2004; Dawson et al., 2007; Lamers and Amelung, 2010; Pizzolato et al., 2014; Johnston et al., 2016; see also Chapter 9). Furthermore, with reductions in sea ice, new cruising corridors are emerging, creating important tourism opportunities in areas that were not previously accessible.

Demand patterns are also increasing because of increased global attention to the effects of climate change in the Arctic. For example, during the Fifteenth Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP15) in Copenhagen in 2009, changes in the Greenland environment were used as a key message to symbolically illustrate the impact of climate change on the region (Bjørst, 2010). The framing of Greenland and, in particular, the vulnerability of Ilulissat Icefjord, a UNESCO World Heritage Site

Box 8.1 Direct and indirect impacts of climate change on tourism

Direct impacts: Climate is a principal resource for tourism, as it determines the suitability of locations for tourist activities and so is a chief driver of tourism demand. Thus, changes in the season length and the quality of climate-dependent tourism regions could have considerable implications for competition among destinations, the profitability of tourism enterprises, and the long-term sustainability of destinations. Studies indicate that a poleward shift of climatic conditions attractive for tourism is very likely and could yield significant positive effects and opportunities for tourism demand in the BBDS region. However, the expected impacts of climate change – including increases in the frequency or magnitude of certain weather and climate extremes (e.g., wind, waves, storm events; Subchapter 3.1), changes in water availability (Chapter 4), loss of biodiversity (Chapter 6), reduced landscape aesthetics, melting sea ice and glaciers, increased mobility of multi-year ice (Subchapter 3.1), increased natural hazards, and coastal erosion – will directly affect the tourism industry through increased infrastructure damage, business interruptions, increased risk of safety incidents, and an altered landscape aesthetic.

Indirect impacts: Because environmental conditions are so critical for tourism, a wide range of climate-induced environmental changes will have profound indirect effects on tourism enterprises, including environmental, economic, and social effects. Examples of indirect impacts include altered tourism demand patterns, altered local economic and employment opportunities, increased need for emergency preparedness plans and equipment, higher operating expenses (e.g., insurance, backup water and power systems, evacuations), more safety and security issues, more cultural conflicts, and increased criminal activity.

and popular tourism destination, as a place where climate change is particularly evident has created a strong perception of urgency in the minds of potential tourists (Bjørst and Ren, 2015). For some tourists, climate-change fears, such as the disappearance of polar bears and melting glaciers, has facilitated a desire to travel to the region to experience it before it is "too late" (Dawson et al., 2010, 2011; Johnston et al., 2012; Lemelin et al., 2012a). This phenomenon has created a niche market that has been labeled "last chance tourism" (Lemelin et al., 2010; Dawson et al., 2011; Lemelin et al., 2012a). Also referred to as "doomsday tourism" or "climate tourism," last chance tourism involves tourists who explicitly seek out vanishing landscapes, seascapes, natural resources, or cultural heritages before they are changed beyond recognition (Dawson et al., 2010; Lemelin et al., 2010, 2012a; Stewart et al., 2016).

The continued increase in tourism in the BBDS region could significantly benefit local residents via increased seasonal employment and other economic development opportunities related to the provision of services and products for visitors themselves and to tourism companies. Tourism also provides access to and education about Inuit culture and local traditions for visitors, which can help shape positive perceptions of Indigenous people from the region – all of which can lead to increased socio-cultural resilience and well-being (Parlee and Furgal, 2012). Tourism also helps to support a local arts and handicrafts culture that supplies the need for souvenirs, which perhaps reinvigorates local interest. Having a larger market for local art has helped to infuse enthusiasm for traditional activities among youth and elders in the region (Furgal and Prowse, 2008; Stewart et al., 2010). Some also believe that visitors to the region may become advocates for the North, returning home motivated to help fund conservation initiatives or educate others about the region (see Maher et al., 2003; Lemelin et al., 2010; Maher, 2011; Lemieux and Eagles, 2012; and Students on Ice, 2016).

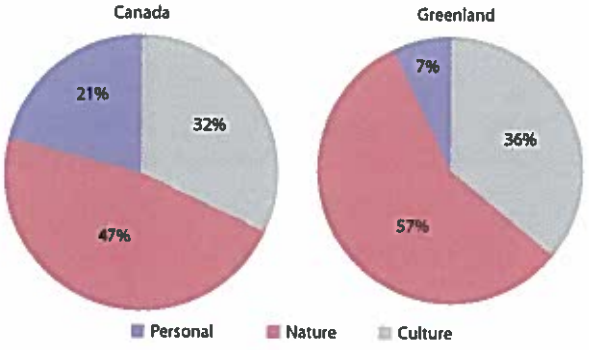


Figure 8.5 Travel motivations to Canada and Greenland.

Despite the opportunities that climate change offers in the BBDS region, the reality of increasing numbers of tourists is also cause for concern. This is a particular issue given that the direct impacts of climate change on the Arctic environment are, in some cases, making the region more hazardous for travel even while increasing the opportunity for it (see Chapter 9). As well, the greater access is increasing the possibility of negative social and cultural impacts from tourism, such as cultural commoditization, disturbance of archaeological sites, and cultural and behavioral conflicts. Furthermore, the opportunities tend to be outnumbered by the propensity for increased risks and negative outcomes that are largely felt at the local level (e.g., conflict, insufficient economic return). Overall, it is challenging to deal with recent growth in tourism demand in the BBDS region, but at present, Greenland has been rather effective in managing the growth through investments in infrastructure, marketing, and other services. The main challenges can be divided into three main categories: (1) safety and security, (2) economic development, and (3) environment and culture.

Given the growing number of tourists visiting the region, there is an increased probability of minor and major human safety and security incidents. In part, due to the fact that tourism has historically played a minor role in the region's economy and, as a result, has been poorly supported, there is a significant lack of tourism-specific services and infrastructure to support the industry. There is limited hydrographic charting across the entire region, search-and-rescue plans have only limited resources to actually

perform rescues, and there is inadequate infrastructure for activities, accommodation, food resupply, and medical services to support visitors, particularly on the Canadian side (Stewart et al., 2015; Johnston et al., 2016; see also Chapters 4, 9, 10 and 12). As a result, accidents have become an increasing concern. In 2007 and again in 2010, cruise vessels ran aground in the region and passengers needed rescue. In 2007, two Danish tourists were killed while photographing a glacier in Greenland. In 2013, a group of 20 tourists became trapped on an ice floe near northern Baffin Island, after the ice broke away and floated toward the Arctic Ocean. The majority of safety concerns directly linked to climate change relate to the perceived increase in accessibility to the region due to reductions in sea ice extent. However, the reality is that the region is now more hazardous to navigate than ever before because of the greater mobility of multi-year ice and the increase in calved icebergs from ice islands and glaciers. These hazards are particularly problematic for single-hulled or small vessels, which tend to be more vulnerable to ice penetration. A cruise ship sinking in the region is considered one of the highest-risk incidents across the Arctic, in light of climate change (Dawson et al., 2014). For this reason, a simulated cruise ship rescue was used as the scenario for Operation NANOOK 2014, a major government-organized, multi-nation search-and-rescue training exercise.

In addition to human safety concerns, there are other concerns related to local and national security. It is thought that increased tourism could bring an increase in criminal activity to the region because of the nature of the industry and the regulatory regime governing international movement (Dawson et al., 2014). For example, in 2007, the *Berserk II* sailing vessel made its way from Greenland through the BBDS region and illegally entered into Canada with two inadmissible crew members (Teeple, 2010). However, such incidents are very rare and therefore not of major concern at present. There is increasing concern about drug smuggling, human trafficking, and illegal entry into Canada via tourism vessels now that the region is perceived to be more accessible and there is more tourism activity (Johnston et al., 2013; Dawson et al., 2014).

Large portions of the economic benefits of the tourism industry do not stay in tourism regions. This is particularly the case with cruise tourism, which is the most popular form of travel in the BBDS region. It is well documented that there are limited economic benefits compared to other types of tourism, as most services are provided on board the ship and not in the community (Klein, 2009; Stewart et al., 2015; Dawson et al., 2016). However, in small remote communities, even limited economic options can be of significant benefit. In the Arctic, the contribution of cruise tourism to the local economy depends significantly on the operators, with some operators making greater efforts than others to purchase locally available activities and products (Fay and Karlsdóttir, 2011; Stewart et al. 2015). Foreign or non-local ownership of marine cruise tourism operations is the norm across the BBDS region as in the rest of the world. This is also the case with many land-based, pre-packaged tours and is a challenge in all parts of the world – but is more pronounced within developing regions such as the Nunavut side of the BBDS. However, tourism – as with all trade – is by nature a transaction between local providers, middlemen, and the customer. The idea of total local control and ownership is not realistic given the current financial and human resources in the BBDS region. Outside ownership results in tourism income leaking out of the region despite increased tourist numbers and total industry revenue. There are also challenges with the seasonal nature of the tourism industry. Jobs in tourism tend to be seasonal or part time, which can make them less desirable (Müller and Jansson, 2007). There is also competition from extractive industries for skilled workers, and because these extractive industries typically pay better than tourism, there is a capacity drain from the tourism industry to the resource industry, especially during the summer months when tourism and resource development employees are most in need. Additionally, specific skills and education are necessary for work in the tourism industry, and potential employees with these skills are not always found in small Arctic communities (Dawson et al., 2007; see also Chapter 5). When Johnston and Viken (1997) spoke with tourism operators in Greenland, the industry representatives commented that few community members seemed to have an interest in working in the industry and few had the foreign language skills necessary to communicate with tourists. To deal with human resource challenges related to tourism in the BBDS region, both Greenland and Canada (Parks Canada and the Government of Nunavut) provide ongoing guide and tourism training opportunities for local residents (e.g., Government of Greenland, 2016).

Furthermore, governing the industry in times of rapid environmental change will be challenging. Monitoring for noncompliance with regulations is both difficult and resource- and cost-intensive. It is not uncommon for small outfitters to operate without proper licenses or permits. In some cases, operators are doing so little business that it may not seem worthwhile to pursue a license or permit; in other cases, operators lack the business skills or a sufficient understanding of the permit system to comply (Dawson et al., 2014). When it comes to larger operations such as cruise ships, different challenges exist. For example, ships regularly sail between nations, so multiple national jurisdictions exist, each with differing and sometimes contrasting regulatory regimes. It is therefore difficult to ensure an appropriate, cohesive, and robust regulatory framework that effectively and efficiently supports the tourism industry across the region (Dawson et al., 2014, 2017b; Lassere and Têtu, 2015). Further, at all levels there seems to be limited knowledge of and compliance with the international CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) regulations or of the export regulations for animal products (Kaae and Råhede, 2011; Dawson et al., 2016).

A lack of regulatory enforcement capabilities also has negative impacts for the local environment, compounded by a lack of interpretative and educational information for tourists visiting the BBDS. Other Arctic regions, such as Svalbard and Alaska, have developed tourism-specific and site-specific guidelines that support sustainability. Efforts to develop site guidelines to protect sensitive environmental and cultural sites in Greenland and Canada are underway but not yet complete. The development of such codes or

Table 8.2 Summary of impacts of climate change on tourism in the BBDS region.

Direct Impacts		Indirect Impacts	
Positive	Negative	Positive	Negative
• Increased summer season length and lengthening of shoulder seasons (autumn and spring) • Increased accessibility in the marine environment due to sea ice reductions	• Changes to regional flora and fauna, as well as landscape aesthetics • Decline of key tourism attractions (e.g., glaciers) • Shifting wildlife habitats and migration patterns, including fish, charismatic megafauna, and other animals targeted for wildlife viewing • Increased prevalence of wind, fog, and extreme weather events • Increased instability and unpredictability of ice conditions • Damage to key tourism infrastructure • Uplifting land masses, altered coastlines, lower sea levels, and coastal erosion	• Promotion of local arts and handicrafts culture within communities • Seasonal employment opportunities for youth and entrepreneurs • Potential for development of a strong tourism economy • Opportunities for increasing tourist awareness and understanding of local Inuit culture • Increasing incentive to improve charting in the region	• Higher operating costs • More hazardous ice conditions, causing marine navigation issues • Floe-edge tours less reliable due to unstable ice conditions • Increased safety and security risks related to increased tourism vessel traffic • High proportion of non-local and international operators • Socio-cultural impacts related to cultural conflict, commoditization, and miscommunication • Higher insurance costs for operators related to hazardous ice, fog, wind, probability of extreme events, and weather uncertainty

guidelines will be vital for moving into the future and has been highly recommended by the Arctic Council (Arctic Council, 2015). Studies of tourists in Ilulissat, for example, show tourist interest in environmental guidelines and labeling, as well as a willingness to pay for environmentally conscious services and operations (Kaae and Råhede, 2011). The arrival of large cruise ships unloading high numbers of tourists in smaller communities and at local sites also causes high social and environmental pressures for a short period of time. This practice can result in a trampling of nature and the disturbance of archaeological sites, as well as disruptions of community life as large numbers of visitors walk around the community, visit spaces normally used by residents, and interrupt regular activities. Local people are also highly concerned about the possibility of fuel leaks or spills in the marine or terrestrial environment, as well as the disturbance effects that tourists may have on local and subsistence wildlife and cultural traditions (Stewart et al., 2011; Meltofte, 2014). The potential impacts of climate change on tourism in the BBDS region are summarized in Table 8.2.

8.3 Expected future tourism change – near term and longer term

The tourism industry is expected to continue to experience moderate growth due to climate change. However, caution is warranted in any speculation that changing climatic conditions alone will facilitate an ongoing increase in tourism possibilities as rapid as has been seen over the past ten years in the BBDS. A number of factors influence tourism development in the region, and the relative strength of climate change as a driver of tourism demand in comparison to other factors is difficult to gauge. It is likely that factors such as global economic conditions, resource extraction activities, technological development, and global social trends may play a greater role in driving the tourism industry than does climate change. However, vulnerability is high and even a single disastrous event (e.g., a cruise ship sinking, a plane crashing, or some other accident) could have a very negative, albeit likely temporary, effect on the tourism sector. Climate change will continue to play a key role in facilitating or enabling tourism growth via the direct impacts of change (i.e., increasing season lengths and marine accessibility). It is also possible that the "last chance tourism" phenomenon (i.e., with firsthand observation of climate effects becoming an attraction itself) may continue in the region in the near term (see Lemelin et al., 2012a). The main factors considered to favor or limit tourism development in the BBDS region are described in Table 8.3.

The remoteness of the circumpolar regions and the resulting initial cost to get there act as a key barrier to the expansion of tourism in Arctic regions. Transportation options are limited to air and water, and so the lack of infrastructure in some areas means that larger airplanes and vessels cannot always be supported. Despite the challenges associated with remoteness, the tourism industry (both land and marine) in the BBDS region is likely to increase between now and 2030. This expected increase is linked not only to climate change but also to infrastructure investments – particularly in Greenland, where the Government of Greenland is finalizing plans to construct new runways in key tourism destinations to allow for direct flights to Europe and North America.

Without the efficiencies related to improved airport infrastructure for larger and newer fuel-efficient airplanes and vessels, the cost of travel to Arctic regions is expected to remain high. Airports in both Nuuk, Greenland, and Iqaluit, Nunavut, are being upgraded to deal with increased traffic (see Chapter 10); these upgrades will be useful in supporting a growing tourism industry into the future. However, building and maintaining infrastructure in the Arctic is costly. Given the low

population base in the region, it has been historically difficult to justify significant infrastructure development. Nevertheless, there is wide agreement that more transportation and services infrastructure is needed and that any new investments should consider multiple uses, including tourism. The challenge, of course, is that infrastructure development requires upfront capital investments, which will continue to be difficult for the region, particularly when the instability of the tourism and natural resource industries makes the forecasting of returns difficult (Hall, 2007). Furthermore, the thawing of permafrost is making infrastructure development more difficult and more expensive (see Chapter 10). Investment is also risky because tourism is somewhat unstable and demand is highly influenced by global trends and social whims that cannot be counted on in the long term. However, tourism has continued to grow worldwide despite major global events such as economic and health crises (e.g., SARS and H1N1 outbreaks). Thus, the industry in general is thought to be highly resilient to these negative global trends. Finally, infrastructure in Greenland has traditionally been determined by local needs, not dictated by national-level tourism strategies.

There is a lack of accommodation facilities in some parts of the BBDS region. In recent years, accommodation facilities in the town of Ilulissat have expanded based on increasing demand and necessary investments being made. The construction of new facilities will in part depend on increased demand in the future, which may also be facilitated by lengthening of the tourism season. Longer tourism seasons enhance the return on accommodation investments and secure longer periods of employment. The short summer season and harsh winter weather has historically made it difficult to maintain year-round tourism (Kaae, 2002; Gunnarsdóttir, 2006; Grenier, 2007; Robbins, 2007; Snyder and Stonehouse, 2007; Hall and Saarinen, 2010; Fay and Karlsdóttir, 2011), yet a warmer climate by mid-century could potentially support longer tourism seasons and enhanced winter tourism opportunities.

The arrival of visitors often tends to be concentrated at one particular time of year, either due to coincidence with a natural attraction or phenomenon (e.g., wildlife migration or reproduction, the midnight sun, or weather) or the timing of institutional holidays (Grenier, 2007). However, this challenge represents an opportunity for marine-based tourism with on-ship accommodation and increased efforts to extend land-based seasons by attracting tourists outside the high season. There is likely to be an increased reliance on cruise ship and pleasure craft activity, and it is likely that the region will attract bigger and more self-contained vessels than have visited in the past, as well as more luxurious vessels (see also Chapter 9).

Table 8.3 Influencing and limiting factors relevant to tourism development in the BBDS region.

Influencing factors	Main attributes
Climate change	Climate-related changes provide increased tourist access to new geographical areas and an extended tourism season due to reduced sea ice cover for longer periods of time.
Global economic trends	Tourism demand is vulnerable to declines and variability in the global economic situation. Climate change may exacerbate the risk of future economic declines in some nations. Reductions in GDPs (gross domestic products) would shrink the discretionary wealth of consumers, with negative implications for anticipated future growth in tourism.
Resource extraction	Increased resource extraction activity deters tourism and could cause conflicts (i.e., capital, resource, aesthetic, and user conflicts).
Technology	Improved transport, search-and-rescue, communications, and other technologies may enable safe tourism enterprises in even more remote regions. AIS, naval charts, and other satellite technology will improve the search and rescue and safety issues that currently exist and will facilitate monitoring for regulatory compliance.
Growing northern population	A growing population provides a local labor force for the tourism sector, as well as increasing opportunities for entrepreneurship and demand for academic and training programs for local people.
Tourism facilities	Interpretative facilities and greater capacity and quality of tourism overnight facilities and services will attract tourism operators and tourists.
Limiting factors	**Main attributes**
Climate change	Unpredictable seasonal variations, instability, and changes in sea ice pose serious hazards to marine vessels. Undesirable changes in landscape and wildlife deter tourists. Key attractions such as glaciers are melting/receding.
Legislation and regulation	Legislation such as the recent executive orders on pilotage and safe sailing in Greenland, the Polar Code, taxation related to the Coasting Trade Act, and the current tourism permitting system may have a significant impact on tourism development.
Lack of available ice-strengthened vessels	Larger vessels are not readily available, and more small vessels are emerging.
Limited infrastructure	Existing infrastructure will be unable to provide the necessary services for a high level of tourism (e.g., limited overnight bed capacity, limited ability to accommodate increasing numbers of cruise passengers visiting small places for short periods of time). The air link between Greenland and Canada has been sporadic and inconsistent, limiting intra-regional tourism flows. Shorter snow seasons and hazardous ice conditions make dog-sledding tours, ice-floe tours, and other related tourism activities risky and unreliable.
Charts and navigation	Poor charts do not allow vessels to safely navigate through the region. There is also increased safety risk for tourists and locals.
Community resistance	Backlash due to unprofitable local economic returns and disturbance of hunting practices and wildlife may arise.

Table 8.4 Tourism scenarios for various conditions of climate change (lower to dramatic levels) and the development of resource-extractive industries (modest to intensive). For more information about the scenario framework, see Subchapter 3.4.

Scenario 1: Dramatic climate change and modest development of extractive industries
• Ongoing increases in tourism activity, especially among pleasure craft and private yachts
• Northward transition of tourism activity (away from the BBDS region toward the Northwest Passage) because of the northward movement of wildlife and expansion of ice-free waters
• Region loses some tourism activity related to ice, glaciers, etc.
• Continual marine traffic from Greenland to Canada (because of existing Coasting Trade Act regulations, which incentivize international voyages)
• Some negative impacts on demand because of increased resource traffic
• Some negative impacts on demand because of a decline in aesthetic and landscape/seascape qualities from increased resource-extractive activities
Scenario 2: Dramatic climate change and intensive development of extractive industries
• Ongoing increases in tourism activity, especially among pleasure craft and private yachts
• Northward transition of tourism activity (away from BBDS toward the Northwest Passage) because of the northward movement of wildlife and expansion of ice-free waters
• Region loses some tourism activity related to ice, glaciers, etc.
• Continual boating and cruise traffic between Greenland and Canada (because of existing regulations)
• Significant negative impacts on demand because of a decline in aesthetic and landscape/seascape qualities from increased resource-extractive activities
• User conflicts (marine)
Scenario 3: Moderate climate change and modest development of extractive industries
• Slower increase in tourism activity, especially among pleasure craft and private yachts
• Some northward transition of tourism activity (away from BBDS toward the Northwest Passage) because of the northward movement of wildlife and expansion of ice-free waters
• Region maintains existing diverse tourism activity
• Continual boating and cruise traffic between Greenland and Canada (because of existing regulations)
• Some negative impacts on demand because of decline in aesthetic and landscape/seascape qualities from increased resource-extractive activities
Scenario 4: Moderate climate change and intensive development of extractive industries
• Slower increase in tourism activity, especially among pleasure craft and private yachts
• Some northward transition of tourism activity (away from BBDS toward the Northwest Passage) because of the northward movement of wildlife and expansion of ice-free waters
• Region maintains most existing diverse tourism activity
• Continual boating and cruise traffic between Greenland and Canada (because of existing regulations)
• Significant negative impacts on demand because of decline in aesthetic and landscape/seascape qualities from increased resource-extractive activities
• User conflicts (marine users)

The current lack of availability and the high cost of building ice-strengthened or Arctic-ready tourism vessels will limit the growth of commercial cruises in the region (Dawson et al., 2007; Stewart et al., 2007; Pizzolato et al., 2013; Chapter 9). However, with polar tourism companies now building their fleet for other parts of the polar regions (e.g., Hapag-Lloyd and Hurtigruten), new vessels will become available to meet and develop demand. Furthermore, ice-free summers could mean a significant enough reduction in ice hazards that larger cruise vessels currently traveling in more moderate climates would be attracted to the region. Some proponents believe it is unlikely that any new cruise vessels will be built only for Arctic travel, as vessels need to be in operation nearly year-round. However, others believe that new polar-purpose vessels will soon be built for customized sailings during the Arctic and Antarctic summer seasons, especially considering the increasing demand from Asian source markets, which is driving this development.

It is likely that significantly more pleasure craft vessels will visit the BBDS region, including many that have on board individuals without Arctic knowledge and ice navigation experience. It is also expected that there will be increases in entertainment-oriented or adventurous activities, such as yacht races and individual efforts to be the first to accomplish a particular feat (see Viken et al., 2014). It is becoming common now to see snorkeling tours in Baffin Bay, kayaking tours on glacial rivers in the Qaanaaq region (Petermann Glacier), and occasionally even glacier surfing on the waves created by ice breaking off of Greenland glaciers. This type of adventure tourism is expected to increase in the future. It is also expected that, despite a lack of infrastructure, the larger cruise vessels that are already arriving in Greenland will begin to visit the Nunavut side of the BBDS region. The future of the industry will also be highly dependent on how risks and major incidents are managed. For example, there have been a number of close calls in the region, but if there is a major safety issue, such as the sinking of a cruise ship or a similar incident, then the reputation of the industry – or tour operator – could immediately be compromised. The Polar Code has now been implemented and entered into force (1 January 2017) with an aim to reduce such risks.

Knud Falk

Harbour infrastructure challenges - large cruise ship visiting Narsarsuaq, South Greenland

The low population base of the Arctic region results in limited availability of trained service providers. This problem is not likely to be solved in the short- to medium-term future. It is often difficult for Arctic tourism operators to hire enough trained service providers in order to run their businesses (Dawson et al., 2007; Müller and Jansson, 2007; Fugmann, 2012). There will continue to be limited interest among local residents to work in the tourism industry for a number of reasons: personal preferences for other work, seasonal employment only, service employment possibly seen as lacking prestige, better employment opportunities in resource extraction or government services, and temporal conflicts with the timing of traditional and cultural activities such as hunting or fishing, limited education opportunities, and lack of entrepreneurship training (Fugmann, 2012; Müller and Jansson, 2007; Dawson et al., 2009; Lemelin et al., 2012a, 2012b; Ren and Chimirri, 2017). The dual impacts of climate change and the development of resource-extractive industries (see Chapter 7) will also play a significant role in shaping the future of the tourism industry. The likely tourism-related effects of the four scenarios outlined in Subchapter 3.4 are summarized in Table 8.4.

8.4 Climate change adaptation options

The extent to which the impacts of climate change will negatively or positively influence the tourism sector in the BBDS region will depend directly on the effectiveness of adaptation strategies in reducing the sector's vulnerability to climate change. *Vulnerability* is a function of both exposure sensitivity and adaptive capacity. *Exposure sensitivity* is the manner and degree to which the tourism industry is sensitive and exposed to particular forces or stresses, and *adaptive capacity* reflects the industry's ability to cope with, adjust to, or recover from stressors (Smit and Wandell, 2006). The tourism industry's exposure sensitivity reflects both the nature of the climatic conditions and the nature of the industry itself. For example, the extent of a particular impact will depend upon the degree to which the tourism industry is sensitive to that impact or the collective interaction of multiple impacts, and also on the extent (i.e., time, degree, level, scope) to which the industry is exposed. In effect, the same climatic event may affect different aspects of the tourism industry differently, with one sector (e.g., accommodation or food and beverage) not being affected at all by a particular exposure, while another sector (e.g., activities, events, or transportation) could be severely affected. It is vital that the industry as a whole reduce its sensitivity and exposure to climatic change as much as possible. Adaptive capacity relates to industry resilience, resistance to negative impacts, flexibility, and robustness (Smithers and Smit, 1997). Adaptive capacity is influenced by economic wealth, social networks, infrastructure, social institutions, social capital, experience with previous risk, the range of available technological adaptations, and access to resources within the region, as well as by the multiple stresses that contribute to the environment in which decisions are made (Smit and Pilifosova, 2003; Ford and Smit, 2004; Smit et al., 2008).

The tourism industry may be able to decrease its exposure sensitivity and increase its adaptive capacity to climate change through a set of strategic adaptation options. Adaptation options can be divided into five key thematic areas, including (1) policy and regulation; (2) infrastructure and technology; (3) services, economic development, and planning; (4) communication, coordination, and outreach; and (5) environmental and

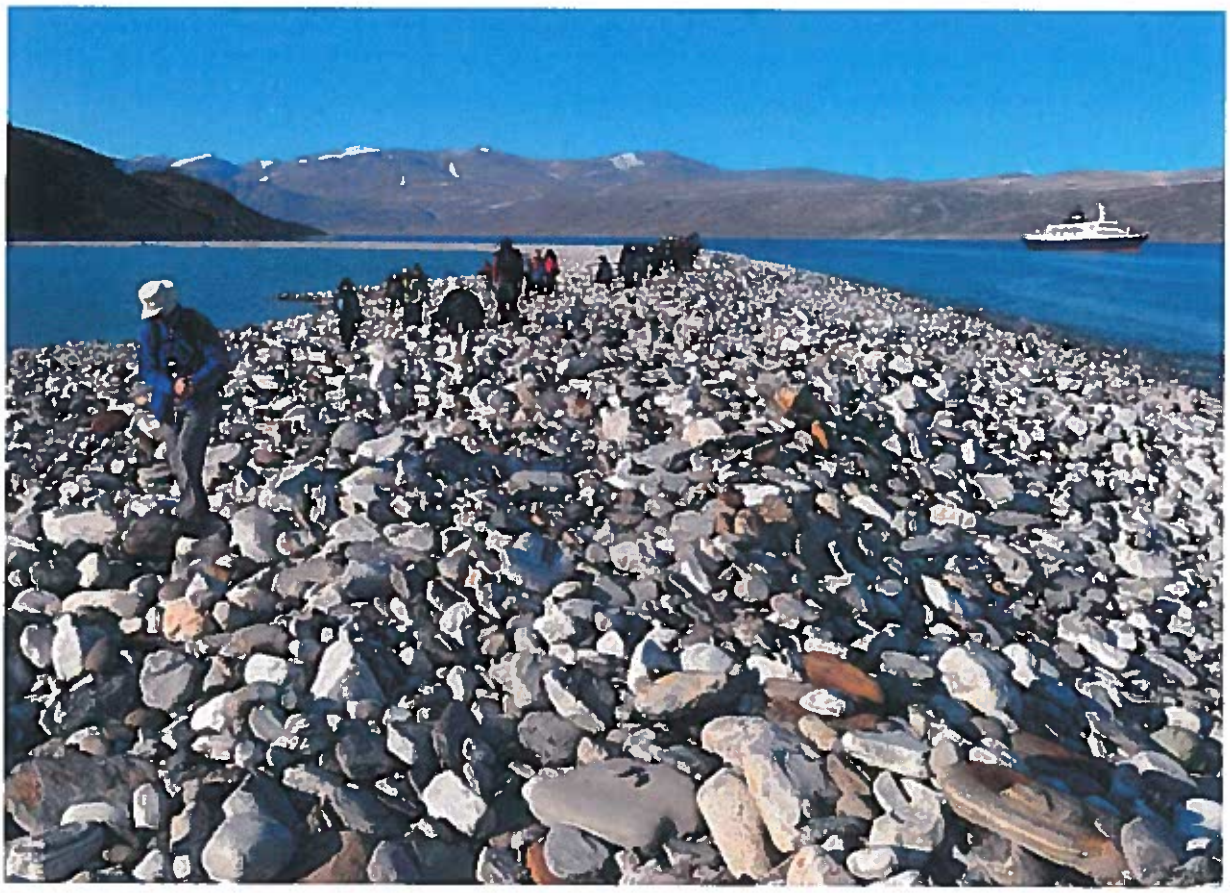
Table 8.5 Climate change adaptation options for the tourism industry (adapted from Dawson et al., 2014; Arctic Council, 2015; Dawson et al., 2016).

Policy and regulation
Establish a sustainable tourism development and planning strategy for the BBDS region
Improve monitoring and enforcement capabilities
Require all commercial tourism vessels to carry an AIS transponder
Require all commercial tourism vessels over 300 gross tonnes to carry ice pilots and local observers on all voyages
Mandate that all vessels must report their locations to authorities
Improve airport infrastructure and increase market competition in order to reduce travel costs
Infrastructure and technology
Invest in multi-use infrastructure to support tourism development and local use
Improve bathymetric data and invest in better soundings
Invest in additional search and rescue infrastructure, including ships and air support
Invest in docking, museum, and other tourism infrastructure
Services, economic development, and planning
Improve search and rescue coordination and response
Enhance funding and services for the tourism industry
Provide funding and regulatory incentives for locally owned and operated tourism businesses
Capitalize on the growing business traveler market
Capitalize on and manage the rapidly growing pleasure craft tourism sector
Conduct planning directly with local residents and encourage local entrepreneurship
Reduce economic leakage from the region (due to over-reliance on external tourism companies) by encouraging the training of local community members and by reducing the percentage of imported goods needed to cater to visitors; in the Arctic, this leakage is difficult to avoid but could be mitigated
Create tourism opportunities jointly with the resource development sector (e.g., mine tours)
Encourage joint ventures between local and external companies to provide market access, knowledge exchange, and capital infusion
Communication, coordination, and outreach
Enhance search and rescue training
Invest in research to better understand the risks of climate change for the industry and coordinate results with insurance providers
Improve monitoring capabilities, including remote (e.g., satellite imagery) and in situ options
Developed shared marketing strategies between Greenland and Canada/Nunavut
Develop shared tourism experiences/products, for visiting both Greenland and Canada/Nunavut
Enhance interpretation and visitor facilities, focusing on local and Inuit culture and nature
Enhance local guide training
Increase digital infrastructure and the use of social media
Environmental and cultural sustainability
Establish incentives and regulatory mechanisms that favor local tourism operators over non-local or international companies
Provide additional tourism training and education programs
Develop and adopt codes of conduct for tourists and operators (e.g., AECO[1] operator guidelines, Arctic Council best practices)
Establish site guidelines for all environmentally and culturally sensitive sites
Consider a ban on the use of heavy fuel oil in cruise vessels
Enhance and promote cultural opportunities in the region
Enhance protected areas (terrestrial and marine)

[1]AECO = Association of Arctic Expedition Cruise Operators

cultural sustainability. Table 8.5 outlines a number of potential adaptation strategies that address the current impacts of climate change for the tourism sector in the BBDS region.

Focused attention on the development of strategies and policies within these five areas can potentially assist the BBDS tourism industry in taking advantage of opportunities and reducing the mounting risks that climate change brings to the region and to tourism operators. Because the region's tourism industry is relatively young compared to the well-established tourism industries in more southern latitudes, and also because industry growth has been so rapid, the regulatory and governance mechanisms that are in place (or are not at all in place) require development or renewal. This need was acknowledged in part by the Arctic Council in a recent report, *Arctic Marine Tourism Project* (Arctic Council, 2015), which made recommendations for best practices for the tourism industry across the Arctic. Important needs in the BBDS region include improving monitoring capabilities, acquiring bathymetric information in marine regions, and investing in infrastructure that supports safety and security, as well as economic development. The regulatory permitting framework on the Canadian side is particularly problematic and requires immediate reform, as it is onerous for operators. Rather than supporting industry growth, the current framework may be hindering economic development and limiting locally owned and operated businesses in favor of foreign operators (see Dawson et al., 2014, 2016, 2017b). Investment in physical and communications infrastructure is



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Cruise ship passengers hiking on a rocky beach at Sunshine Fjord, Baffin Island, Nunavut, Canada

desperately needed in the region. In the short term, automatic identification system (AIS) transponders should be made mandatory for all commercial tourism vessels operating in the region. This requirement, while necessitating improved Internet and satellite technologies, would help to improve safety measures and enable more effective search and rescue planning and preparedness. Furthermore, it is vital that improvements be made in our understanding of ocean depths, including the acquisition of additional soundings and bathymetric data. As sea ice continues to melt, tourism vessels will be traveling off the beaten path into territories unknown, where there is currently limited navigational information (see Chapter 9).

Local community involvement through the provision of tourism services and products also requires consideration and implementation of adaptation options. The residents and local governments of some communities have expressed an interest in certain approaches to adaptation (see Dawson et al., 2014; 2016; Stewart et al., 2015). For example, in Pond Inlet, Nunavut, where increasing numbers of cruise visitors led to local concerns about visitor behavior, a welcoming guide was prepared to help visitors understand local expectations and desires (see Carter et al., 2018). Many of the risks related to increased access and changing tourism patterns are experienced at the local level. While regional adaptation options are needed, alongside those undertaken by a largely external tourism industry, it is vital that the local tourism industry, community residents, and local governments also assess adaptation options.

8.5 Conclusion

Climate change and the resulting environmental changes are now playing a substantial role in catalyzing economic development opportunities across the Arctic as the region becomes more accessible and attractive to private industry investments, including the tourism sector (Avango et al., 2013). Increased climate-related accessibility to the Baffin Bay/Davis Strait region has already resulted in major developments in tourism and related economic opportunities. In particular, cruise ship traffic has expanded and is now joined by even more rapid growth in pleasure craft travel.

Climate-induced changes have direct and indirect impacts, which include positive and negative effects in the BBDS region. It is generally believed that the Arctic cruise tourism industry is well positioned to be a beneficiary of climate change over the short term (Marquez and Eagles, 2007; Dawson et al., 2014). A changing climate brings about new Arctic cruise corridors and a longer cruising season, which – if managed well – could benefit local residents via increased seasonal employment that enables visitors to experience Inuit culture and traditions, promotes historical and contemporary arts, and supports national sovereignty (Furgal and Prowse, 2008; Stewart et al., 2010; Nunavut Tourism, 2011). It is clear that Greenland is considerably advanced in comparison to Nunavut in the development of infrastructure, marketing, coordination, and tourism strategies. West Greenland is currently in a strong competitive position. For tourism in Nunavut to be as

successful, the opportunities brought by climate change must be viewed as territorial and community priorities.

The climate-induced changes include a northward expansion of ice-free navigable waters during a longer summer season and a predicted continued increase in both cruise and pleasure crafts in the region. These trends are generally beneficial for the tourism sector in the BBDS region, and a continued increase of tourism demand is expected well into the future. Also, tourism industry expansions are likely to continue on land, along with the expansion of infrastructure and facilities. However, some types of tourism activities, particularly ice- and snow-related activities, may be negatively affected by climate change. For example, popular tourism sights such as glaciers and the Greenland inland ice sheet may recede and eventually become less attractive for tourists (though in the short term, they may be highly attractive to tourists who want to see them before it is "too late").

Climate changes also represent some risks for the tourism sector in the BBDS region. Already, the poor quality (e.g., low precision) of some sea charts is a matter of concern due to the issue of safety. With increased marine access to unmapped regions and an expected uplift of the land and sea floor on the Greenland side due to melting of the inland ice sheet, the risk of accidents at sea is increasing. In addition to these safety and security issues, high economic leakage out of the BBDS reduces the local benefits of tourism and is a structural challenge for the tourism industry. A lack of regulatory enforcement capabilities and of interpretative and educational information for tourists represent additional challenges. Finally, a range of environmental and cultural impacts from tourism – particularly those associated with the practice of making brief visits with high numbers of cruise tourists in small communities – imperil fragile natural and archaeological sites. Some guidelines and codes of conduct are being developed.

The short-term future of tourism change in the BBDS region is expected to be one of moderate growth and expansion. In the longer term, various scenarios of external factors may influence the trajectory of tourism change.

The effectiveness of climate adaptation strategies is important for influencing the positive and negative effects of change on the BBDS tourism industry. A range of climate change adaptation options are provided above in relation to policy and regulation, infrastructure and technology, services, economic development and planning, communication, coordination and outreach, and environmental and cultural sustainability. Many of these options are already urgently needed in the region to help guide transitions, enhance opportunities, and reduce risks. Major findings for the region relate to infrastructural and other capacity issues; a need for investment in marine services, sector regulation, and monitoring; the importance of community-led initiatives and local entrepreneurship; and the importance of multilateral collaboration in the region.

The development of specific adaptation strategies for the explicit purpose of taking advantage of climate-induced economic opportunities – rather than focusing merely on mitigating the suite of readily apparent negative risks – is relatively new thinking (see Ford et al., 2012). This opportunities-based focus has received very limited attention within the scholarly literature on the human dimensions of climate change in general (Ford et al., 2012) and on climate change and tourism more specifically (Weaver, 2011; Kajan and Saarinen, 2013). Some scholars have called for a more focused research agenda on understanding the second-order opportunities that are emerging from climate change, including economic development options (see Ford et al., 2012; Cameron, 2012; Kajan and Saarinen, 2013).

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