

Tourism Development by The Arctic Circle Road



A black line representing the Arctic Circle Road is drawn across the bottom of the image. It starts at a red circle on the left, goes up and over a hilly area, then down and over a valley, and finally up to another red circle on the right. The road is shown winding through a landscape of rolling hills and a river in the background.

Sisimiut

Kangerlussuaq

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Editor Qeqqata kommunia & Arctic Circle Business (ACB)
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Summary

The business community in Destination Arctic Circle and Qeqqata Municipality has over the last 25 years developed, operated and focused on development of tourism between Kangerlussuaq and Sisimiut. The distribution of roles has been that the municipality has often created the framework in cooperation with the Greenlandic Government. This framework has been used by the local business community in cooperation with voluntary organizations and citizens and external partners to develop tourism and joint events for the benefit of citizens throughout Greenland and travelers from all over the world.



The regional effort has created major tourist and marketing successes such as the

- » Arctic Circle Trail
- » Arctic Circle Race
- » the Ice Sheet Road
- » the Polar Circle Marathon
- » the new port of Sisimiut
- » the UNESCO World Heritage Site Aasivis-suit-Nipisat and trout fishing and trophy hunting concessions.

Efforts are being made to develop new permanent initiatives such as

- » a new port in Kangerlussuaq
- » a concessionary glacier and animal park tourism project at Aqutikitsaq
- » cold climate test area and new attractions such as a swimming pool in the mountains of Sisimiut.

The many initiatives have created the basis for a year-round tourism development in the region, which has made it possible for smaller local tourism companies to create all-year jobs in tourism.

Half-year workplaces in tourism are a scarce commodity in Greenland, where many regions see large imports of labor in the tourism industry during the 2-3 summer months of the high season.

Tourism development has created the foundation for the construction of Arctic Circle Road to be a success. Arctic Circle Road will give access to a large land area in Greenland and provide experiences along this road. As in the rest of the world, Arctic Circle Road will give access to areas and sights that are otherwise difficult to access. Roads have been crucial for the world's tourism development, and the Ice Sheet Road has made Kangerlussuaq the second largest tourism destination in Greenland. Local businesses are ready to invest significantly in the construction of hotels, resorts, lodges and cabins along the Arctic Circle Road.



The Arctic Circle Road will give certainty to Kangerlussuaq's future and thus create the basis for hotel investments in Kangerlussuaq.

Due to the uncertainty about Kangerlussuaq's future after closing the US airbase in 1992, no one has dared to build new hotels and lodges. It has created a hotel accommodation capacity in Kangerlussuaq with many cheap hostel beds, which unfortunately is not related to the country's other hotel infrastructure and therefore does not create connections in the national tourism structure.

The Arctic Circle Road will also provide a cheap transport option between two places in Greenland. This means that it will be much cheaper for a tourist in Greenland, and this could make more people interested in travelling to Greenland. It also provides a more differentiated infrastructure so that tourists can experience and get around in the "Golden Circle of Greenland" (Kangerlussuaq-Sisimiut-Ilulissat) on land, water and in the air. The continual development of tourism in the region and a significant increased number of tourists along the Arctic Circle Road will give synergies to the rest of the tourism regions in Greenland.

The many year-round tourists in the Destination Arctic Circle region will move on to the UNESCO areas in Ilulissat and South Greenland regardless of the time of year. Tourism in the regions between the major UNESCO attractions will also be developed, just as the existing business and visiting tourism in Nuuk will experience even better conditions. Tourism in Aasiaat and Maniitsoq could be better developed as a tourist destination when tourists, after travelling on the Arctic Circle Road, want to have other experiences nearby. The new airport structure with several longer runways and several overseas routes will increase the number of tourists on round trips into Kangerlussuaq via Ilulissat and Nuuk.

Arctic Circle Road will be economically viable and will have a payback time of just 11-14 years. Arctic Circle Road will generate jobs in the tourism industry, which gives tax revenues of at least DKK 54 million annually incl. increased airport charges and goods taxes to the National Treasury.

Arctic Circle Road will also be profitable to invest in for the public sector from a budgetary point of

view. It will thus be profitable for the Greenlandic Government and Qeqqata Municipality to construct Arctic Circle Road and find a distribution key for investments in connection with the construction and operation of Arctic Circle Road.

The distribution of revenues to the Greenlandic Government and the Municipality is dependent on whether Kangerlussuaq Airport and the other traffic infrastructure facilities in Qeqqata Municipality will remain a national portfolio or which completely or partially transcends to the Municipality. Qeqqata Municipal Council has decided to set up a limited liability company "Arctic Circle Traffic Ltd", which will own, construct and operate the traffic infrastructure facilities in the region. The takeover and securing of Kangerlussuaq Airport and the construction of Arctic Circle Road is a priority.



Arctic Circle Trail

The 160 km long Arctic Circle Trail between Kangerlussuaq and Sisimiut has become the most iconic hiking route in the Arctic in relatively few years. The number of hikers is increasing significantly and in 2018 came to over 1,500. Guides in English and German on the Arctic Circle Trail have been released. Foreign media enthusiastically mentions the hiking route as the Arctic Camino.

The Arctic Circle Trail has been the setting for many interesting stories. In 2018, 100 employees from the international bank HSBC walked 100 km on the route. HSBC Arctic Challenge 2018 consisted of a week's stay in Greenland, with one day trip to the Greenland Ice Sheet from Kangerlussuaq, 5 days hiking on the Arctic Circle Trail and 1 day stay in Sisimiut. A German hiking enthusiast has been walking the Arctic Circle Trail every year for the past 10 years.

The Arctic Circle Trail is also the story of a deliberate commitment to long-term tourism development from the local business community and the municipality. In the early 1990s, 6 smaller cabins were built on the Arctic Circle Trail as an offer for locals and tourists. Some years later, 'Private Sisimiut Tourism' invested in building

a larger canoe center in the form of a 300 sqm large cottage in the west end of Amitsorsuaq. In the 2000s, the route was marked with cairns, and the municipality built another two large cabins at Innajattoq and Ittineq.

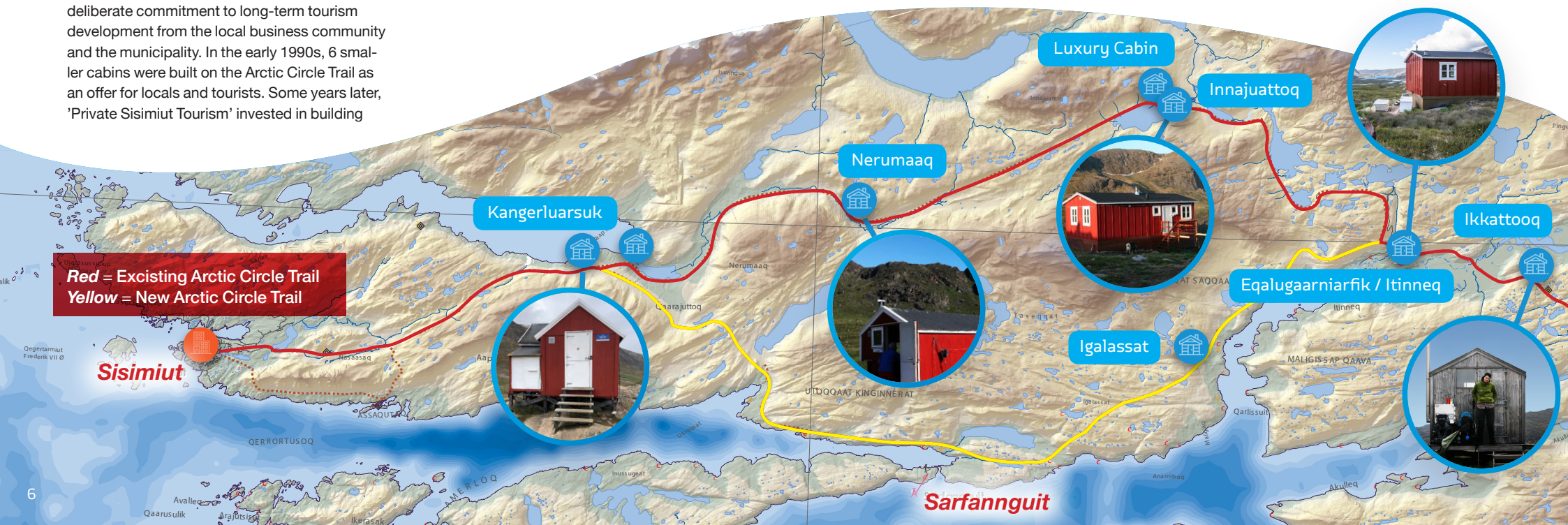
The new large cabins have at the same time provided good conditions for dog sledding, cross-country skiers and most recently fatbike riders on the route in the winter. The canoe centre and the Innajattoq cabins are perfect when

dogsleds, skiers and cyclists take the route in 3 days and need 2 nights. The fastest dogsleds use the Ittineq cabin when they run the route for 2 days and 1 night.

Cycling on the Arctic Circle Trail has been a conscious gamble from the tourism industry. Destination Arctic Circle made a collaboration with Red Bull and the Czech national Petr Kraus in 2012 to promote mountain biking at the Greenland Ice Sheet. Hotel Sisimiut and Sirius Greenland have since 2014 arranged fatbike tours from the Ice Sheet to the Davis Strait along the Arctic Circle Trail.

Chris MacDonald completed the U-turn program in 2016 with the diabetic affected participants

on a dogsled ride on the Arctic Circle Trail. It provided invaluable media coverage for Greenland at the best broadcast time in Danish National Television (DR). New initiatives to use the Arctic



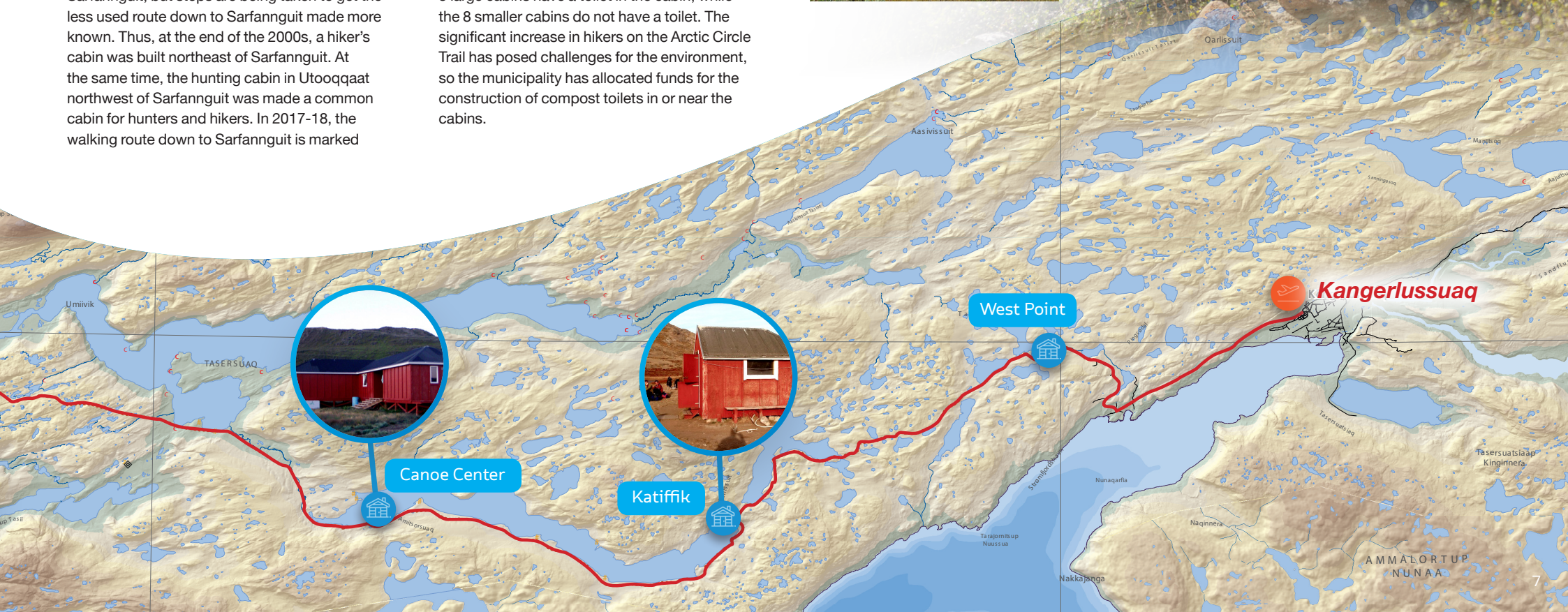
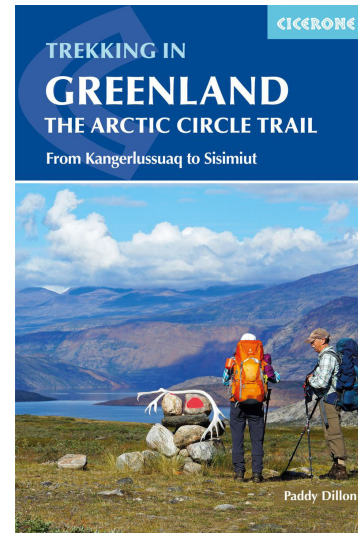


Circle Trail for annual events are underway, including the possibility of an annual trail run and an Arctic triathlon.

The main route of the Arctic Circle Trails has so far gone through the Nerumaq valley north of Sarfannguit, but steps are being taken to get the less used route down to Sarfannguit made more known. Thus, at the end of the 2000s, a hiker's cabin was built northeast of Sarfannguit. At the same time, the hunting cabin in Utoqqaat northwest of Sarfannguit was made a common cabin for hunters and hikers. In 2017-18, the walking route down to Sarfannguit is marked

with cairns, and a shelter on the mainland at Sarfannguit is under construction at the same time as Arctic Circle Business is hosting tourism workshops in the village.

The cabins are operated by the municipality. The 3 large cabins have a toilet in the cabin, while the 8 smaller cabins do not have a toilet. The significant increase in hikers on the Arctic Circle Trail has posed challenges for the environment, so the municipality has allocated funds for the construction of compost toilets in or near the cabins.



Arctic Circle Race

The Arctic Circle Race is the world's toughest cross-country race and has been on the top-10 list of the world's most challenging sporting events several times. .

The Arctic Circle Race is also an icon of Greenlandic winter tourism. Skiers from all over the world have participated. International media such as the British BBC and German ZDF have sent television crews to Sisimiut and had longer broadcasts about the race. Skiing stars such as legendary Bjørn Dahlie and Thomas Alsgaard and many Vasalop winners have participated. The same is true of Danish Crown Prince Frederik and many other sports enthusiasts with desire for challenges.

The Arctic Circle Race was launched in the mid-1990s by a group of local enthusiasts from the skiing and business community of Sisimiut. The group joined forces with Olympic participant Michael Binzer and



Visit Greenland. Initially, a 160 km long race of the Arctic Circle Trail from Kangerlussuaq to Sisimiut was launched. The cabins at Amitsorsuaq and Innajuattoq, together with tents, were to be the two accommodations for cross-country skiers and volunteers. The logistics challenge of moving the camp during the race was too great and the start-up in 1996 had to be cancelled.

The year after in 1997, the concept for the future Arctic Circle Race was ready. Starting from Sisimiut, the participants went out on Friday to Innajuattoq, where the famous ACR camp was placed for the first many years. On Saturday, participants continued halfway to Kangerlussuaq before turning around and returning to the ACR camp. Sunday, they returning to Sisimiut after two nights in the ACR camp.

The ACR camp has moved around through the race's 22-year history. A story that has been characterized by volunteering and the meeting of locals and skiers from all over the world, and not least hard work. Both from the participants running the 160 km, but also from the volunteers planning the race and setting up the ACR camp and taking it down again. A challenge that has been enlarged over the years by the changeable weather, which has given difficult conditions for setting the trail and locating the ACR camp, when lack of snow and ice, and not least stormy weather has had its grip on the ACR camp.

Throughout the years, the Arctic Circle Race has received municipal funding for trail layout and transportation of half a million kr. The local business community has funded the rest through sponsorships covering both money and equipment. The number of participants has fluctuated between 100-220 participants. Many revisit year after year or with a few years between. German Klavs Jechel has participated 13 times.

Many become aware of the Arctic Circle Trail route when they participate in the Arctic Circle Race, so participants return in the summer or try the original Arctic Circle Race on cross-country skiing between Kangerlussuaq and Sisimiut. Mike Fencker Thomsen first ran the 160 km between Kangerlussuaq and Sisimiut in 2018, after a day's completed the 160 km in the Arctic Circle Race.





The Ice Sheet Road

The American Military created a simple tramline or track from Kangerlussuaq to the Ice Sheet at the Russels' Glacier, when they between 1941-1992 operated the American base in Sønder Strømfjord (Kangerlussuaq). The track remained to be used by the locals and tourists after the American base was closed.

In 1999, the German Volkswagen Group (VW) created a dirt road all the way from Kangerlussuaq to the Ice Sheet at Point 660. Thus, the original track was improved the first 20 km to Russels' Glacier and extended by 15 km to Point 660. VW continued with 120 km of road on the Ice Sheet, where in the years 1999-2004 they ran the car test centre named Aurora. VW abandoned the test centre in 2004, as it was too expensive to re-establish the road on the moving ice sheet. The municipality took over the responsibility for the Ice Sheet Road and has since 2004 operated the road in collaboration with the local tourism operators.

The Ice Sheet Road has become Kangerlussuaq's biggest tourist attraction, with up to 14,000 tourists each year experiencing this unique tour. At the Russels' Glacier, a glacier front is experienced with its 70 meter vertical wall with deafening ice breaks. At Point 660, it can be experienced to walk around on the Ice Sheet itself or spent a night in tent camps. On the 15 km between Russels' Glacier and Point 660 the Ice Sheet edge is experienced with its diversity of melting ice, glacier columns, vertical ice walls ending in mountains, rivers and lakes. The Ice Sheet road has since 2001 been the setting for the Polar Circle Marathon. Set in

October, it begins with a tour on the Ice Sheet at Point 660 and proceeds on the Ice Sheet Road to the destination in Kangerlussuaq. The number of participants is at the maximum 200, of which 95% are foreign participants.

In recent years, the municipality has planned areas along the Ice Sheet Road for hotels, cottage villages and independent cabins for both the tourist industry and the local people. Albatros Travels has been granted area allotment to a cottage village by the 'Ice Front Lake' (Israndssøen) near Point 660. An ice front lake is characterized by partly having land as a delimitation of the lake, like all other lakes, but also having the Ice Sheet on one side of the lake. It offers spectacular views of the Ice Sheet and the glacier.

At Russels' Glacier, areas have been planned for :

- » hotels
- » cottage villages
- » cabins for tourists and researchers, as well as privates

The same is true of the waterfall behind Sugarloaf. On the other side of Sugarloaf along the

road, only single cabins may be built. 3 smaller walkways are planned near Russel's glacier, allowing tourists to access sights such as waterfalls, ice caves and glaciers.

The tourist industry in Kangerlussuaq has invested in many buses and exciting vehicles for use on the Ice Sheet Road. As the buses are also used to drive back and forth to the harbour in connection with cruise tourists shipping out or coming in and to muskox photo safaris and trips to the water lake, it can be worthwhile for the tourist industry to invest in new vehicles. Economies of scale can be found on transportation.





Kangerlussuaq

Red = Cottage/Lodges areas
Yellow redraw = VW Road to Ice



New harbour facilities in Sisimiut and Kangerlussuaq

In 2012-13 Qeqqata Municipality constructed the municipal port in Sisimiut for a total cost of DKK 56 million. The port was inaugurated with the berthing of Sea Explorer's call on June 20, 2013. Qeqqata Municipality chose to prioritize this investment in a traffic infrastructure facility even though the responsibility for public investments in overall traffic infrastructure including ports lies with the Greenlandic Government.

The reason for the municipal council's prioritization was that for many years there had been catastrophic shortage of quays and wharfs in Sisimiut. The lack of space and facilities meant that trawlers and other fishing vessels looked for other ports as well as the noticeably increasing number of cruise ships since the turn of the millennium, couldn't make berth in the hectic summer months. When Cairn in 2010-11 drilled for oil off the Disko Island (Qeqertarsuaq), where Aasiaat naturally became the base port, Sisimiut was rejected as a secondary base port relative to the longer-distance harbour in Nuuk. With the prospect of seeing that all these business potentials were not utilized, the municipal council chose to prioritize funding of a new municipal port.

In 2012, a project group, set up by the Greenland Government and the municipality and lead by the chairman of the Transport Commission, Chresten Sørensen, published a socio-economic analysis on Sisimiut Harbour. The report showed that the port was economically profitable, primarily due to the positive effects on cruise tourism in Greenland. The different scenarios pointed out that cruise tourism generated 60-70% of the socio-economic benefits, while fishing and oil exploration only generated 15-20%.

The reason for the large socio-economic benefits for Greenland in a new port in Sisimiut is primarily due to improved conditions for cruise ship turnaround stops where passengers are replaced with new. Many smaller cruise ships (often referred to as expedition ships) choose to replace passengers and sometimes crew in Kangerlussuaq. Thus, they can stay in Greenlandic waters for a longer time, which means larger consumption in Greenland from the cruise ships and its passengers. The larger cruise ships briefly visit

Greenland on the road between Europe and the United States, but these ships do not buy supplies and do not have stops in particularly many cities or settlements.

The smaller expedition ships often navigate Greenland for longer periods, often for many weeks or even months. These ships dock in many cities and settlements, primarily from Kangerlussuaq – Sisimiut and northward, which generates revenue at many sites when passengers go ashore on city walks or buying local souvenirs. The ships replace passengers and crew in Kangerlussuaq, which generates airport charges to the National Treasury as well as transfer to the harbour and trips into the Ice Sheet by road, provides revenue to the tourist operators in Kangerlussuaq.

But the ships also need oil and new supplies, which they purchase in Sisimiut. But if they can't dock, they can't purchase supplies.

The new municipal port in Sisimiut has led to that almost all cruise ships can make berthing. This means that more ships choose Greenland as a cruise destination. In Sisimiut, it provides jobs and income for, among others

- » Polar Oil
- » Blue Water
- » Pisiffik
- » Brugsen

to supply the ships with oil, food and other goods. The tourist operators also have more customers on city tours, hiking, sailing trips and in restaurants and cafes, both because there are more ships, and because the tourists more often go ashore instead of staying on the ships.

Kangerlussuaq



Existing Harbor

New Harbor

Because of the socio-economic calculations for cruise tourism at better harbour conditions, by the Transport Commission chairman's, Qeqqata Municipality has logically chosen to explore possibilities for improving the port opportunities in Kangerlussuaq. In Kangerlussuaq, the cruise ships cannot reach the quay at the present harbour located 14 km from Kangerlussuaq, as waters are too shallow at this location. The Center for Arctic Technology has carried out several studies on a possible new port location further out in the fjord. In collaboration with Ramboll, these studies have been analysed, and they clearly point to a location at 'Hancock Pynt' 10 km further out in the fjord compared to the existing 'harbour'.

Ramboll has examined the road conditions for a connection and prepared a socio-economic analysis. Based on the assumptions by the chairman of the Transport Commission's for Sisimiut, the analysis shows that a new port in Kangerlussuaq will be one of the best investments in Greenlandic traffic infrastructure.

By 2017 the construction of the new port in Kangerlussuaq was included as a top priority in the national sector plan for ports. In 2017-18, funds were allocated for the design of the port by the Greenlandic Government and funds for the actual construction of 3 new port facilities in Greenland, including Kangerlussuaq.

UNESCO World Heritage

An area between the Ice Sheet at Kangerlussuaq and coastal islands south of Sisimiut called Aasivissuit-Nipisat was listed as a UNESCO World Heritage Site on 30 June 2018. The approx. 20 km wide (north-south direction) and 235 km long (east-west) area was appointed for its unique hunting/fishing tradition over millennia.

The Aasivissuit-Nipisat area is at the same time the first Inuit cultural landscape north of the Arctic Circle that has become a UNESCO World Heritage Site.

Greenland now has 3 UNESCO World Heritage Sites after the inclusion of the UNESCO Natural Area Kangia Icefjord at Ilulissat in 2004 and the UNESCO Cultural Landscape with a focus on agriculture for thousands of years in South Greenland.

It is quite unique that a country with only 56,000 inhabitants can embrace 3 UNESCO sites.

Ilulissat has since 2004 experienced a large tourism boom, which the two new sites may expect in the coming years. With the 3 World Heritage Site located almost as pearls on a string up the west coast, the opportunity for an overall UNESCO World Heritage initiative has been created for Greenland.

The UNESCO World Heritage Site Aasivissuit-Nipisat is appointed as a result of the long hunting/fishing tradition where the population

during the winter has been living out on the coast and in the summer taken on fishing trips inland to the Kangerlussuaq area.

This transition between sea / coast and inland takes place today, where summer / autumn trips to trout fishing and reindeer hunting areas currently are done quickly with motor boats on day, weekend, weekly trips from the now more permanent residences on the coast.

Sisimiut

Sarfannguit



The two main archaeological sites at Aasivissuit north of Kangerlussuaq and at Nipisat south of Sisimiut have been used by the local population for millennia. Aasivissuit as summer residence / camp for reindeer hunting and Nipisat as a winter residence with a focus on the many different sea animals, fish and birds. The many reindeer around Kangerlussuaq have optimal feeding conditions in the lush and sunny area protected from the snow rich winter conditions at the coast, e.g. the Maniitsoq Ice Cap (Sukkertoppen Iskappe).

7 archaeological key sites in the area including Aasivissuit and Nipisat have been the cornerstone of the UNESCO application. Some of these 7 sites in the area are still being used for hunting/fishing, since the conditions settle down are the same as in historical times.



Greenland Ice Sheet



Kangerlussuaq

However, only one of the 7 key sites is now permanently inhabited, namely the village of Sarfannguit. This village, together with Kangerlussuaq and Sisimiut, have good opportunities for developing tourism.

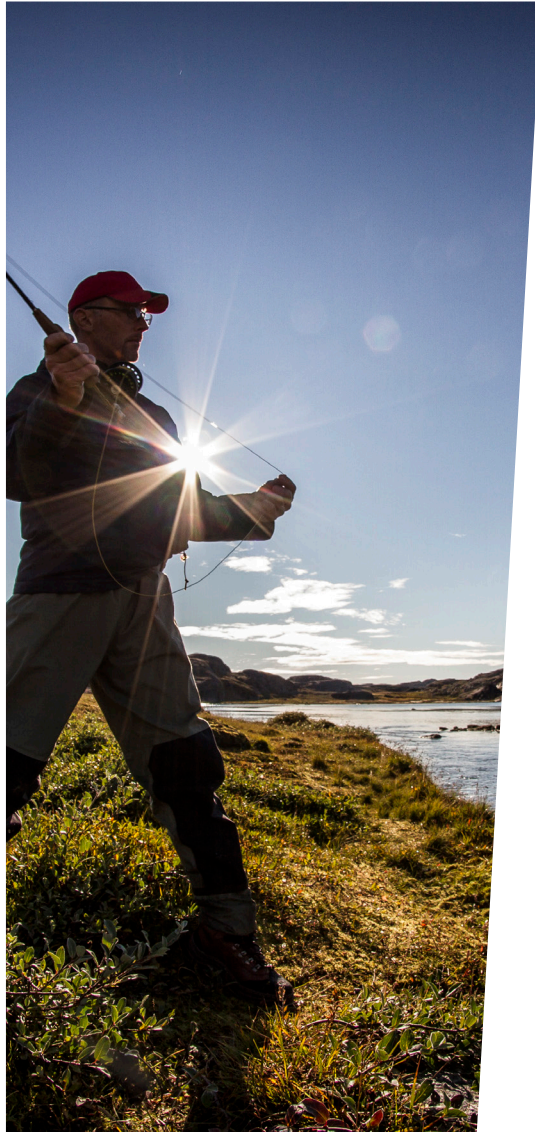
Sarfannguit is located on the hiking route Arctic Circle Trail, although the main route for the hikers has been located north of Sarfannguit in the Nerumaq valley. In the future, more tourists are expected to visit Sarfannguit, from where it is possible to go by boat to Sisimiut if you do not want to hike all 160 km between

Kangerlussuaq and Sisimiut. A hiking route from Sarfannguit to Nipisat is being investigated. From Nipisat it is also possible to go by boat to Sisimiut. From Kangerlussuaq, road access into the world heritage area is already available with the Ice Sheet Road, but a byway as part of the road between Sisimiut and Kangerlussuaq up to Aasivissuit will in future give local people and tourists the opportunity to visit the impressive summer settlement.

The appointment of the World Heritage Site has had a long process and required close

cooperation between the public parties. Aage V. Jensen Charity Foundation granted DKK 1.8 million in 2015 for the admission work, and in January 2017 the application was submitted to UNESCO together with a management plan. Following a site visit to the area by UNESCO's professional consultants from ICOMOS in September 2017, many questions and answers followed between ICOMOS and the project team. On 30 June 2018, Aasivissuit-Nipisat joined the World Heritage List at the UNESCO Congress in Bahrain.

Tourism concessions for individual activities



Greenland differs from most other countries by not having private ownership of land. Citizens have free access to all areas, which is an attractive principle with many benefits for everyone in Greenland. But tourists also have free access to all areas, and this presents some challenges if tourism is to be developed and provide returns to Greenland. This also applies to other industries and business sectors.

In the field of mineral resources, licenses and concessions have been used for a long time, so that international and local investors could safely invest in oil and mineral exploration when the legislation gave them exclusive rights to utilize the found deposits subsequently. The same has been true in the agricultural industry in South Greenland.

In the field of tourism, the concession option was first introduced in the legislation in 2011-12, first only to streams for trout fishing and subsequently for all tourism activities in general. The legislation allows the local municipality to plan for concession areas in the municipal plan, after which the Government by the Ministry of Industry prepares tender documents and conducts the procurement. A committee consisting of the Government entities and the Municipality assesses the incoming bids and recommends final approval to the government of Greenland (Naalakkersuisut).

The Business Council of Arctic Circle Business and Qeqqata Municipality had for several years fought for the introduction of concessions for trout fishing and trophy hunting, so the region was also the first to implement the new

opportunities with municipal plan addendum for tourism concessions on both trout fishing and trophy hunting. The Ministry of Industry has subsequently prepared tender documents and in 2016, the first 5 tourism concessions were awarded on trout streams in Qeqqata Municipality with effect from 1 January 2017. In 2016, the remaining streams were offered again, and 3 streams were allocated to tourist operators. Altogether, 8 of the 16 planned trout streams for tourism concession have been allocated to tourist operators.

In early 2018, the trophy hunting areas were tendered, and in May 2018, 10 out of 12 sub-areas in the municipal plan addendum for trophy hunting at Kangerlussuaq were allocated to tourist operators. There were also applications in the last 2 areas, but the applications were not assessed sufficiently qualified for allocation.

New tenders for trout fishing and trophy hunting are expected to be completed by the end of 2018 or early 2019. Qeqqata Municipality has also prepared municipal plan addendums for tourism concessions for skiing in the area between Maniitsoq and Ililleq. Tender material is being prepared by the Ministry of Industry and is expected to be offered in 2019.

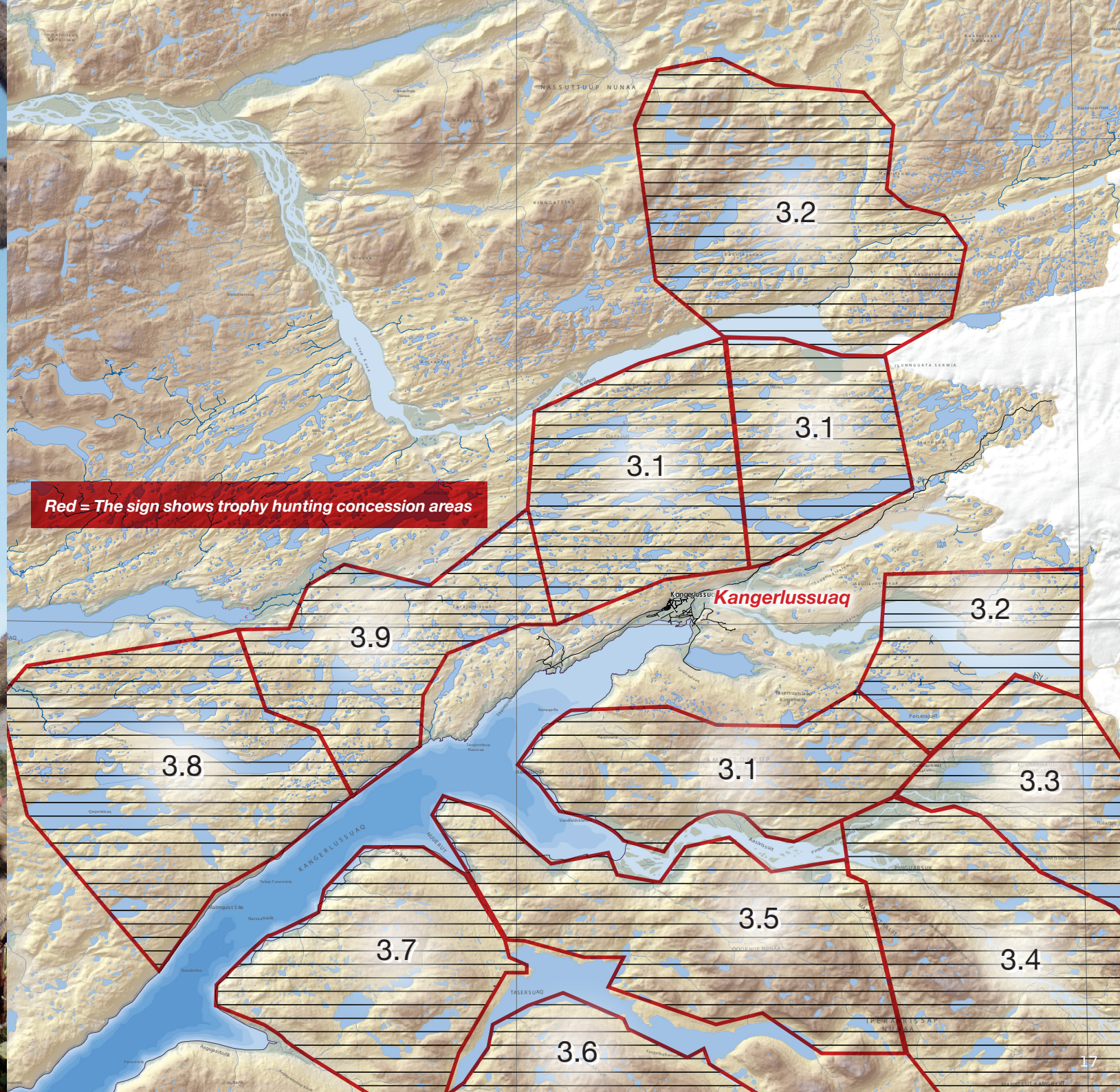
The 8 trout streams licenses and 10 trophy hunting licenses are awarded to 10 tourist operators. 8 of the 10 concessionaires are from Qeqqata Municipality, 1 has previously resided in the municipality, while 1 never has. 9 of the 10 concessionaires are small local family businesses, most of which are based on the fishing and hunting industry.

The allocated trout stream concessions are most often based on the use of tent camps, as the areas are more remote from tourist activities. The awarded trophy hunting licenses are all close to Kangerlussuaq, which allows the area to be used for other purposes based on the large tourism sector in Kangerlussuaq.

The trophy hunting concessionaires have in their bids conditioned to build 6 new lodges / cabins in total and to enlarge the only present trophy hunting lodge. In total, lodges / cabins with room for 58 overnight tourists and accompanying guides and other staff will be built within a few years. In 3 of the trophy hunting areas that have been planned, cabins are not allowed as they are located within a RAMSAR area, where the protection of bird life in the special wetlands is a top priority.

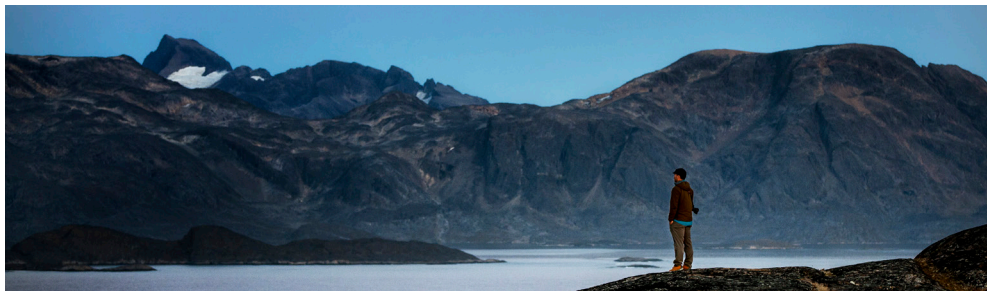
In 2019, the trophy hunting concession area is expected to be expanded in a municipal plan addendum for a large area along the Arctic Circle Road. With first a dirt road and since an actual gravel road, gives access to this area, and provide opportunity to offer new trophy hunting concessions in the new UNESCO World Heritage Site. Tourists can go with local tourist operators out into the 4,500-year-old Inuit hunting area and UNESCO World Heritage site and hunt for muskoxen.





Tourism concessions for an overall tourism project

The concession legislation also provides a different option than planning for many areas for a single tourism activity such as trout streams, trophy hunting or skiing.



A private operator can apply for a single tourism project in one area based on a concession for one or more tourist activities. Here, the private applicant must request the Municipality and the Government to prepare a municipal plan addendum and tender documents respectively, as the proposal must be exposed to competition. The active private sector has so far applied for two such tourism concessions.

In 2015, Sirius Greenland applied for a tourism concession to a wilderness lodge near Erfalik south of Itilleq. The concession was applied based on several tourism activities, including on the area's attractive trout streams and skiing terrain. Municipal plan addendums were prepared and submitted for public consultation but were not finally approved. The reason for this decision in the municipal council was, among other things, that the trout streams were already licensed in concessions and therefore already withdrawn from the planned wilderness concession area. In addition, the skiing area was intended as part of the overall skiing license area between Maniitsaq and Itilleq, which was in preparation and has since been approved.

In 2017, Iglo Mountain applied for tourism concession for multi-activities for the Aqutikitsaq and Ungallup Qaqqaa areas. The concession is applied for a large number of glacier activities such as skiing, mountain biking and ice climbing, as well as a number of traditional tourism activities like dogsledding, snowmobiling and accommodation, but also an animal park.

A municipal plan addendum has finally been approved by the municipal council in November 2018, and tender documents issued with deadline on May 27, 2019.

Iglo Mountain has for several years worked on developing the glacier project Aqutikitsaq. The area has good winter access for snowmobiles, snowcats and dogsleds from Sisimiut, and in summer by boat to Kangerlusarsuk Ungalleq (2nd Fjord). In recent years, randonée tourism in the area has increased considerably, just as heliskiing tourism, based on private yachts, has come to light. In 2014, the municipal council approved a new transportation bylaw for the open country, where round trips around the Aqutikitsaq glacier via Kangerlusarsuk Ungal-

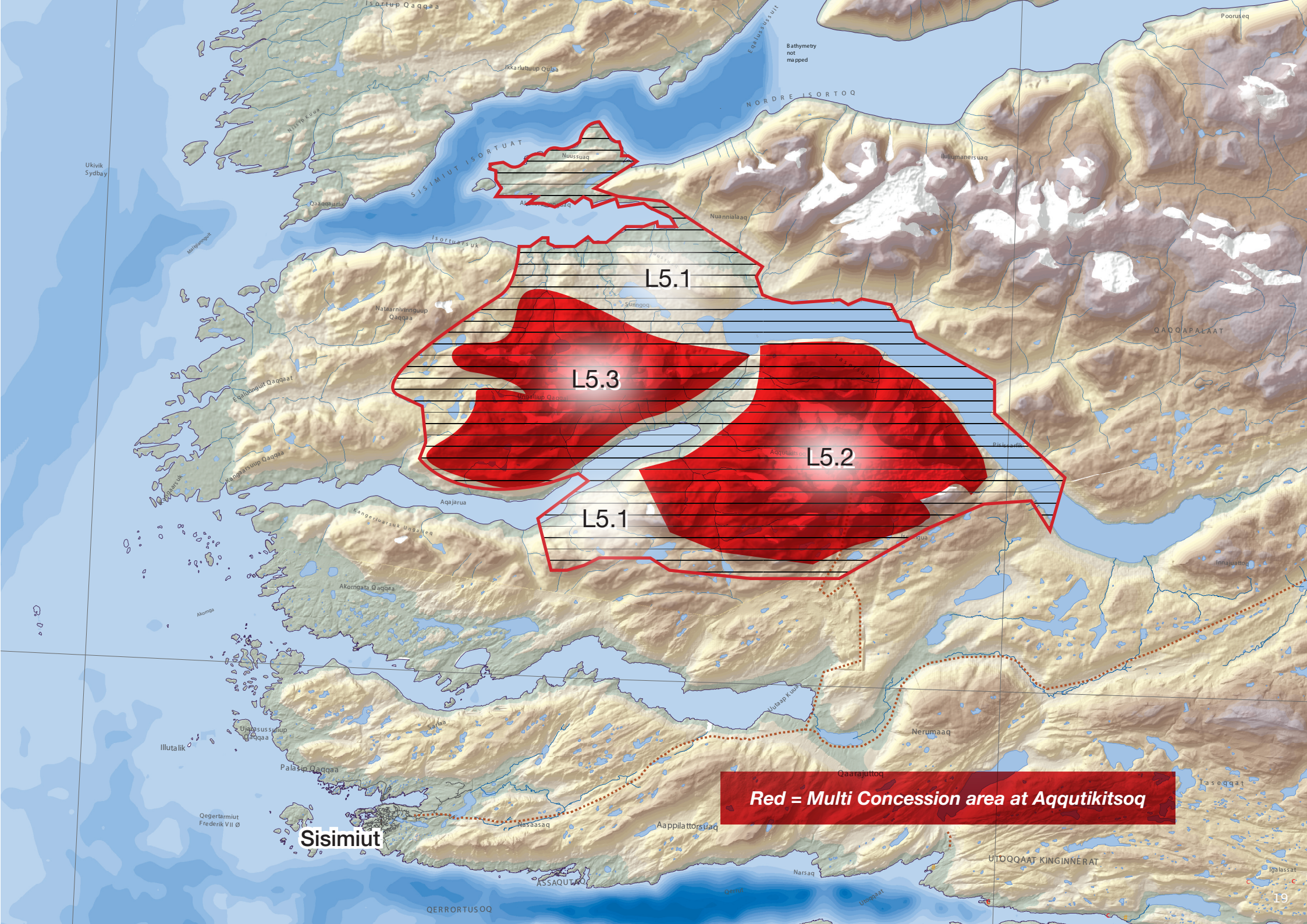


leq, Kangerluarsuk Tulleq (1st Fjord), Kangerluarsuk Ungalleq (2nd Fjord) and Tasersuaq (water power lake) became possible with snowmobiles. This meant better access to the Ungallup Qaqa skiing area, when snowmobiles could now get close to this randonnee skiing and cross-country skiing area. An area that was otherwise part of the Arctic Circle Races 2nd day in 2008.

Through their good dialogue with investors, Iglo Mountain has clarified that an increasing focus on exploiting the many tourism potentials in the glacier area requires full-year access to Kangerlussuaq Airport. Sisimiut Airport or a runway at the project site is not considered to be sufficient. The planned road between Sisimiut and Kangerlussuaq is only 8 km in beeline from the glacier Aqutikitsaq.

The precise route between the glacier, animal park and hotel project at Aqutikitsaq to the Sisimiut-Kangerlussuaq road is being investigated right now. It is also investigated how the funding of this road can be provided either by the private or public sector or as a private-public partnership.





Red = Multi Concession area at Aqqutikitsoq

Climate research and Cold climate testing

Kangerlussuaq is Greenland's base for international research, in particular climate research on and around the Ice Sheet. The good access to the Ice Sheet by the Ice Sheet Road combined with a secure airport with plenty of room for the many research aircraft has made research big in Kangerlussuaq.

According to United Nations World Tourism Organizations (UNWTO) definition, a tourist is a person who travels away from his normal area for leisure, work or other reasons for less than a year. Researchers often stay in hotels, and research hotels are created in places with a lot of research activities.

Kangerlussuaq International Science Support (KISS) serves as a research hotel. At KISS, researchers can not only stay overnight, but also have access to laboratories, as well as storage facilities for research equipment around Kangerlussuaq. The researchers rent cars to drive on the Ice Sheet Road or just around Kangerlussuaq to prepare and handle equipment before the trip goes to the ice sheet.

The many climate researchers are primarily in Kangerlussuaq during the summer, when the American air force simultaneously trains landing on the Ice Sheet. The American Air Force manage transportation of the scientists and researchers to the Ice Sheet. During the winter season, this combination of military flight exercises and climate research is moved to Antarctica.

Commercial research in product prototypes is mostly conducted in refrigerated laboratories companies and research institutions worldwide. However, large prototypes such as motorized vehicles and aircrafts need large space to carry out their tests, which therefore cannot be done

indoors in laboratories. Here scientists go to cold climate areas to test their prototypes in the cold environment.

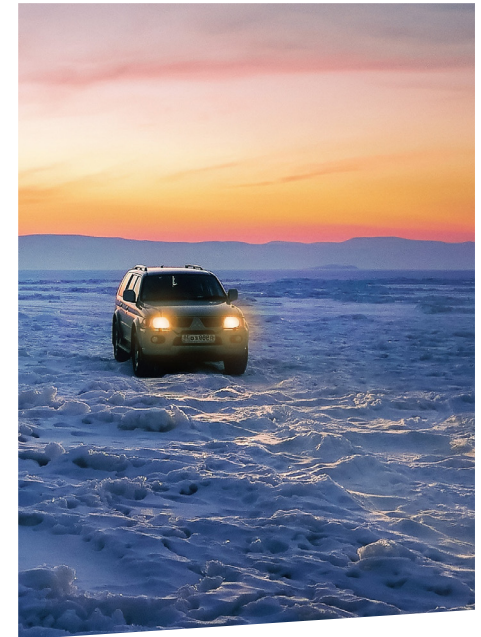
Cold climate testing of cars is a major industry. Especially the European car industry must constantly develop new car types in order not to be outperformed by cheap copies from low-wage areas in Asia. In northern Scandinavia, primarily in Sweden, the car test industry has developed with many jobs and many visiting engineers from the major car groups in Sweden, Germany and Italy. The tests take place during the winter months and give the hotels in North Sweden around the Polar Circle all year occupancy. The car groups also need to test the cars in cold climate, while there is summer in the northern hemisphere. Therefore, the prototypes must be flown to the southern hemisphere with engineers, equipment, etc.

In the 1990s, the German Volkswagen Group (VW) found an alternative to testing the cars in the summer, so that they could stay in the northern hemisphere and avoid major transport costs. The solution was the test centre Aurora on the Ice Sheet. As previously mentioned, they built on the Ice Sheet at Kangerlussuaq and built a 120 km road on the ice sheet to test cars during the summer. Unfortunately, they had not anticipated that the ice sheet was moving as

much as it was, and in 2004 they closed again. Climate change was worse than assumed.

The climate changes have also reduced the possibilities for car testing in the winter months in North Sweden. Several European car groups have visited Kangerlussuaq to investigate the possibility of getting a longer test period here than in North Sweden. The colder and more stable climate at Kangerlussuaq and on the ice sheet provides longer test periods than in Sweden. The disadvantage is the transport costs, as trucks and planes easily take the trip from Central Europe to North Sweden, while there are further away, and it is more expensive to get to Kangerlussuaq.

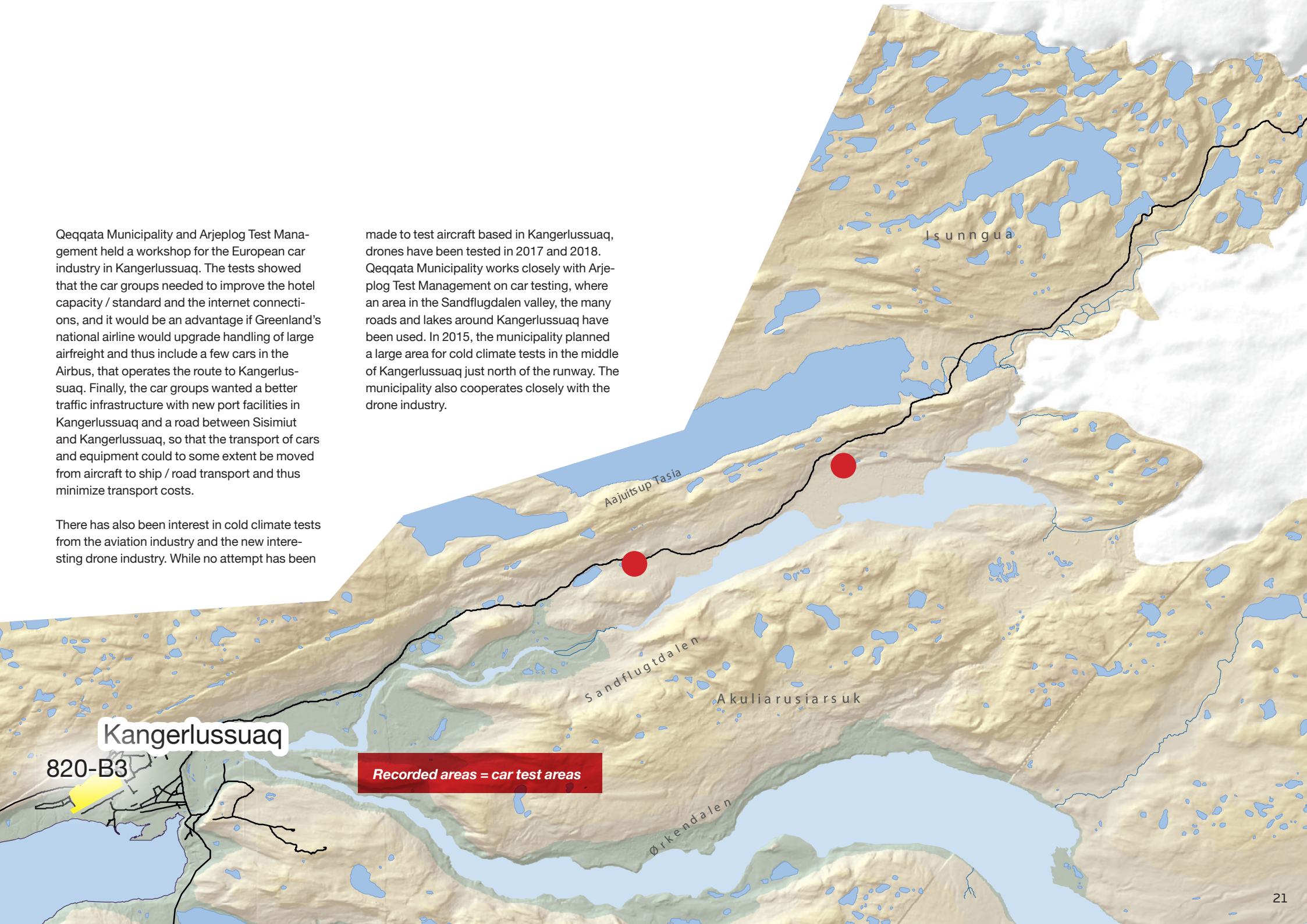
BMW did a pilot test in October 2014, where they were very unfortunate because of the hottest week in living memory for October in Kangerlussuaq. In 2015, the Greenlandic Government,



Qeqqata Municipality and Arjeplog Test Management held a workshop for the European car industry in Kangerlussuaq. The tests showed that the car groups needed to improve the hotel capacity / standard and the internet connections, and it would be an advantage if Greenland's national airline would upgrade handling of large airfreight and thus include a few cars in the Airbus, that operates the route to Kangerlussuaq. Finally, the car groups wanted a better traffic infrastructure with new port facilities in Kangerlussuaq and a road between Sisimiut and Kangerlussuaq, so that the transport of cars and equipment could to some extent be moved from aircraft to ship / road transport and thus minimize transport costs.

There has also been interest in cold climate tests from the aviation industry and the new interesting drone industry. While no attempt has been

made to test aircraft based in Kangerlussuaq, drones have been tested in 2017 and 2018. Qeqqata Municipality works closely with Arjeplog Test Management on car testing, where an area in the Sandflugtdalen valley, the many roads and lakes around Kangerlussuaq have been used. In 2015, the municipality planned a large area for cold climate tests in the middle of Kangerlussuaq just north of the runway. The municipality also cooperates closely with the drone industry.



Tourism in Qeqqata and Greenland

Statistics Greenland operates a tourism section in their statistics bank. Here you can find data for three areas: airline passengers, hotel nights and cruise ships. The air passenger statistics show that approx. 75% of international travellers use Kangerlussuaq Airport, and both the number and the share via Kangerlussuaq have been increasing over the past 3 years.

The other overseas airports in Greenland either have passengers all year round as Nuuk and Nerlerit Inaat or primarily in a hectic summer / tourist high season such as Kulusuk, Ilulissat and Narsarsuaq.

Kangerlussuaq Airport is almost in-between with passengers all year round, but with a significant increase in the summer months. Kangerlussuaq Airport has, contrary to the other airports, not had its passenger maximum in July, but in August, which is due to the many charter flights for primarily the cruise ship turnaround stops in August in Kangerlussuaq.

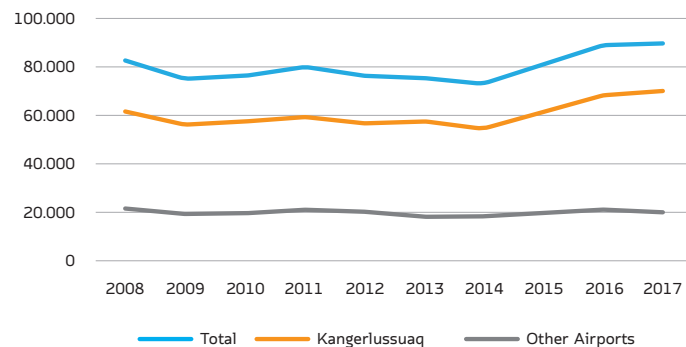
Unfortunately, the air passenger statistic doesn't include final destinations for passengers, neither locals nor tourists. To clarify how many tourists are visiting the different regions of Greenland, one must use

statistics on hotel accommodation. The national Sector Plan for Tourism released by the government of Greenland (Naalakkersuisut) also defines foreign hotel stays in Greenland Statistics as a figure for tourism. Since Greenland's statistics only calculate one city separately, namely Ilulissat, Visit Greenland, Arctic Circle Business and Qeqqata Municipality settled in early 2017 to investigate the number of tourists in Kangerlussuaq.

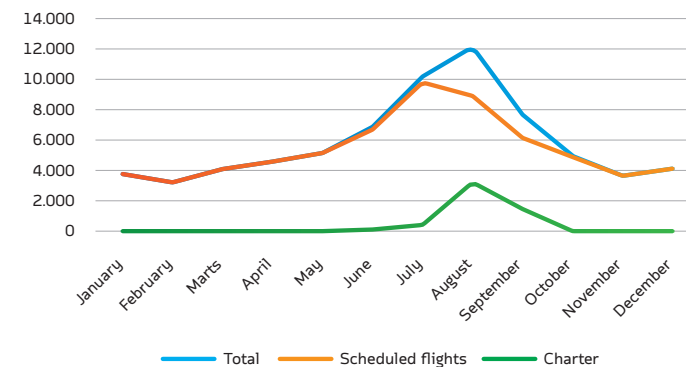
A separate abstract from Greenland's statistics for 2016 did not surprisingly show that Kangerlussuaq by far handled the largest part of tourism in Qeqqata Municipality. These closer investigations showed that there were some shortcomings due to lack of reporting from both large and small hotel and tourism operators.

The three partners conducted a survey of tourism in Kangerlussuaq. The many small operators with tourists in cabins at trout streams and trophy hunting trips were not included in the official tourist figures from Greenland Statistics. It also turned out that two major accommodations in Kangerlussuaq did not report on various grounds. The survey showed that Kangerlussuaq had more than 10,000 additional

Passengers, traveling from Greenland



Foreign passengers from Kangerlussuaq

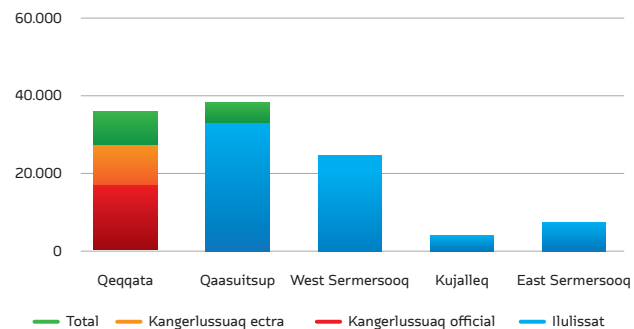


foreign overnight stays than the 17,000 reported to Greenland Statistics. Overall, there were not just 27,000 nights in Qeqqata Municipality, but 37,000 nights counting the missing reports. Kangerlussuaq is thus very close to having as many foreign overnight stays as Ilulissat, and Qeqqata Municipality is close to having as many as Qaasuitsup Municipality in 2016.

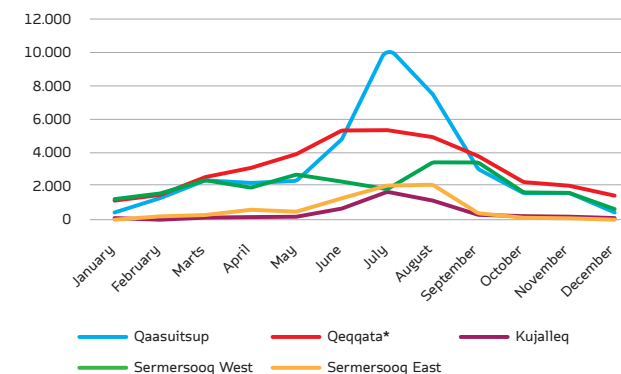
The hotel statistics counts just like the air passenger statistics with distribution in months. It shows that Qeqqata Municipality has the most foreign overnight stays in most months of the year compared to other regions. In July and August, Qaasuitsup Municipality with Ilulissat, however, has the most, just as Sermersooq with the capital Nuuk has most in January and February.



Foreign hotel accomodations 2016



Foreign hotel accomodations 2016





Year-round tourism in Qeqqata Municipality

The greater distribution of tourists throughout the year for Destination Arctic Circle's compared to the other regions is not a coincidence. Arctic Circle Business and Qeqqata Municipality have focused on year-round tourism. It has not only been based on the assessment that the region also has strengths in the winter, but also based on a deliberate effort to create year-round jobs in the tourism industry. This provides the basis for local business to focus on tourism throughout the year, thereby minimizing the need for summons for the short summer season.

Just as the local population has been using the different opportunities of the sea and the land over the various seasons through the different seasons, cf. the recently appointed UNESCO World Heritage Site Aasivissuit-Nipisat, the tourism industry in the Destination Arctic Circle region has also managed to exploit the various opportunities that each season allows.

Destination Arctic Circle Region's focus on distribution of tourism not only to be about the summer can be clearly seen on Visit Greenland's marketing initiatives in the beginning of 2010 with chef Chris Coubrough. In each region, Visit Greenland, in cooperation with the business community in that region, conducted a film focusing on chef Chris Coubrough's preparation of the region's ingredients and tourism experi-



ences. All the regions in Greenland focused on presenting their region during the summer high season. The exception was Destination Arctic Circle, which focused on winter tourism with trophy hunting, dog sledding, snowmobiling, heliskiing, diving and northern lights.

The regional focus on year-round tourism by Destination Arctic Circle provides the basis for other regions in Greenland to begin to benefit more from their investment in year-round tourism. Most tourists in Greenland would like to experience several regions, e.g. by sailing up the Greenlandic west coast with Arctic Umiaq Line or round trips such as The Golden Circle of Greenland (Kangerlussuaq-Sisimiut-Ilulissat). A success for Destination Arctic Circle in the winter will provide more tourists to the other regions and vice versa. Together, they make each other stronger and attract more tourists.



The marketing of Greenlandic tourism is carried out overall by Visit Greenland in collaboration with private business, and the regions and municipalities. Visit Greenland has focused its efforts in recent years on the story of The Big Arctic Five. The Big Arctic Five is an equivalent to the African Big Five, which attracts

millions of tourists to Africa to experience the 5 big animals:

- » lion
- » elephant
- » rhino
- » leopard
- » buffalo.

Visit Greenland's Big Arctic Five is:

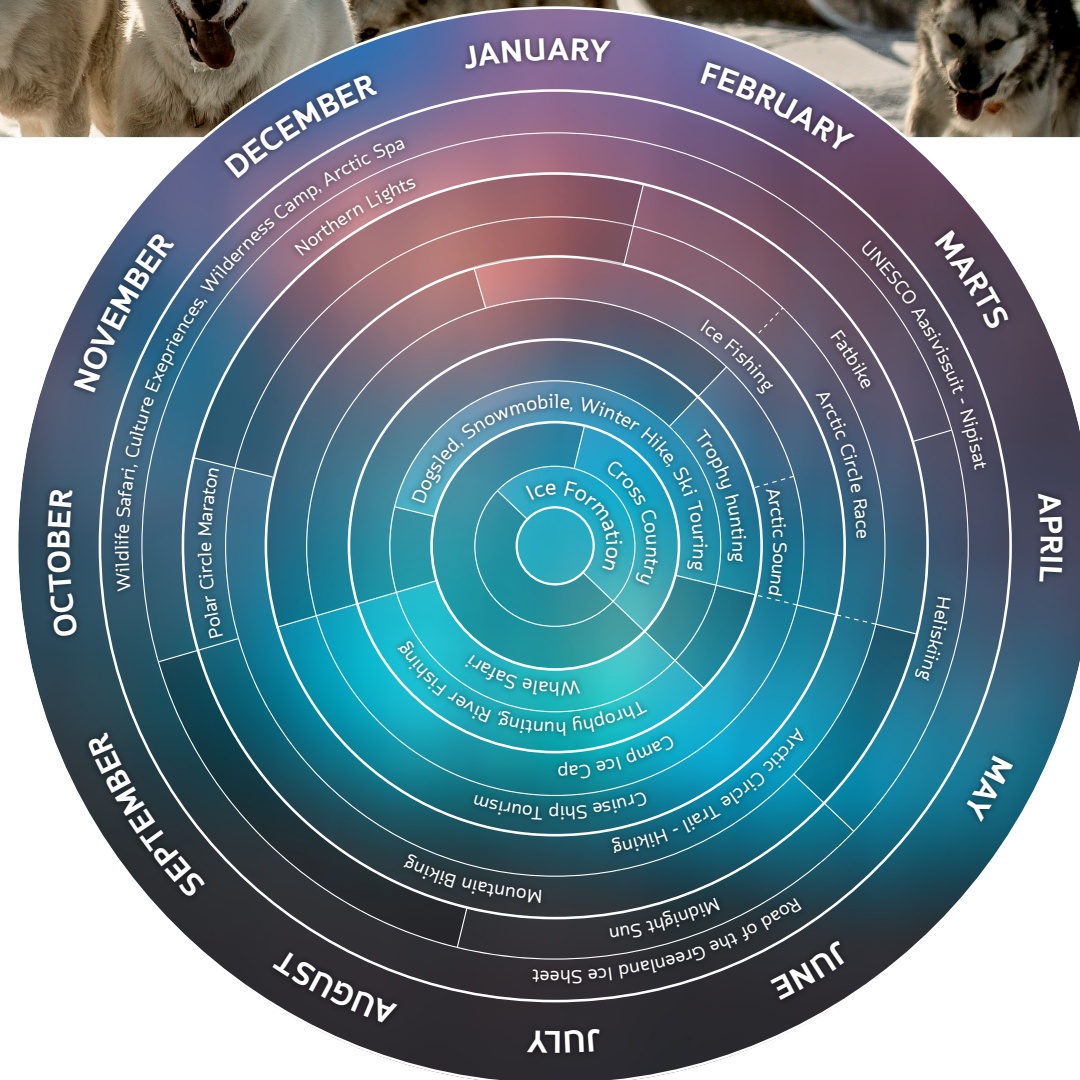
- » dog sledge
- » northern lights
- » icebergs
- » pioneer people
- » whales.

This 'ingenious' marketing effort focuses on all-year experiences like the icebergs (for some regions) and the pioneering people / culture and on winter activities such as dogsledding and northern lights, as well as summer activities like whales and icebergs (for some regions).

Separately, neither Sisimiut nor Kangerlussuaq, can offer the tourist all the elements of the Big Arctic Five. Both places have innovative people with a desire for new initiatives and dogsledding is offered in both places, although it is sledge riders from Sisimiut who carry most of the tours

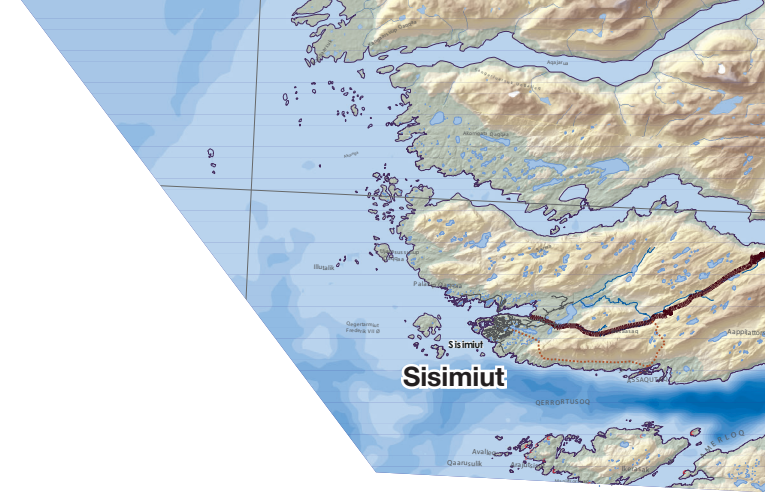


in Kangerlussuaq. Kangerlussuaq can also offer access to the ice sheet all year round, and there is almost 100% guarantee on the northern lights in the weather-stable area. On the other hand, Kangerlussuaq cannot offer whales. Sisimiut, on the other hand, can offer whale watching but the ice is not as spectacular, and the Northern Lights cannot be seen with a 100% guarantee in Sisimiut. Together, however, the two sites can offer all the Big Arctic Five.



Relateret links:

<https://www.tripping.com/explore/9-best-places-to-see-the-northern-lights>
<https://edition.cnn.com/travel/article/best-northern-lights/index.html>



Arctic Circle Road — *A GAME CHANGER*



Arctic Circle Road between Kangerlussuaq and Sisimiut is a game-changer, because:

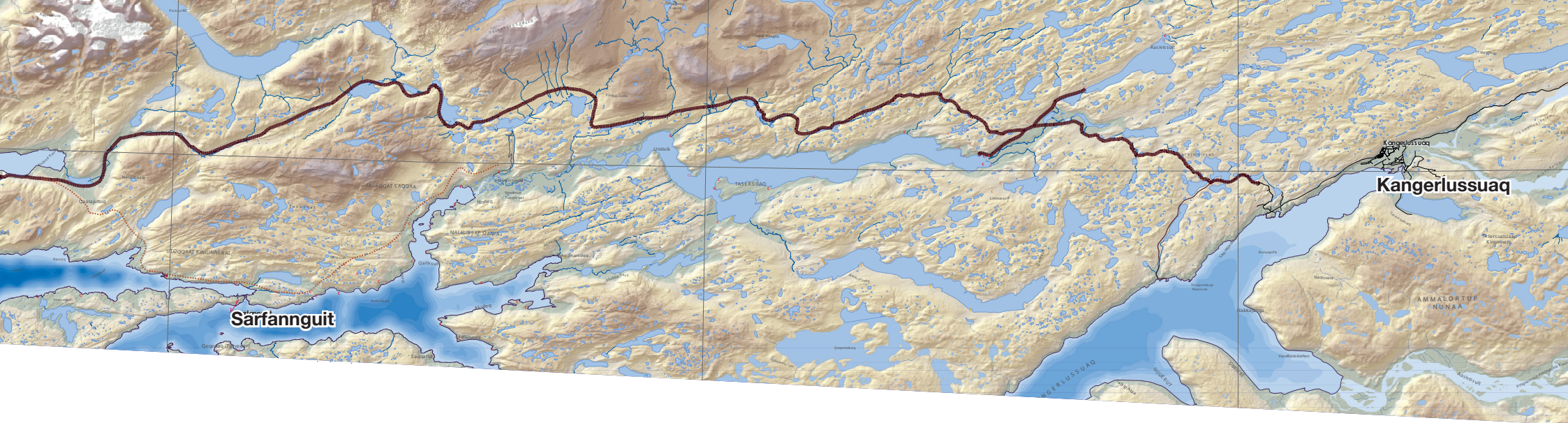
- » Arctic Circle Road provides cheap, flexible and independent transport between two cities
- » Arctic Circle Road gives access to a large area
- » Arctic Circle Road secures the basis for hotel investments in Kangerlussuaq

In addition to Arctic Circle Road providing cheap, flexible and independent transport between two cities, it will allow tourists to visit two cities / destinations in Greenland far cheaper than now. Arctic Circle Road will give the opportunity to experience The Big Arctic Five with a combined stay in Kangerlussuaq and Sisimiut. The advantage of cheaper transport is also attempted elsewhere in Greenland, with a focus on larger airports, but road transport not only provides cheaper transport like airports. Road transport allows the tourist operators

or tourists to carry put this part of the journey themselves, without being dependent on airlines' limited number of departures or the weather.

It will also provide possibilities for visiting even more cities than Kangerlussuaq and Sisimiut, because if the transport here is cheaper, then a third city may also be visited for the funds that the tourist had chosen to prioritize on the Greenland tour. Now Ilulissat can for instance be visited in addition to Kangerlussuaq and Sisimiut. Or Sisimiut, if the tourist had prioritized Kangerlussuaq and Ilulissat.

In addition to Arctic Circle Road gives access to a larger area, it will allow for a travel experience through the landscape to special sights such as the UNESCO site at Aasvissuit or the glacier at Aqqutikitsq. Thus, current inaccessible locations are made available, making a stay in Kangerlussuaq-Sisimiut a 5-day experience, for the tourist who might previously only choose to be 3 days in the region, divided into 2 days in



Kangerlussuaq and 1 day in Sisimiut before the tourist continued to Ilulissat. But it also allows for all the many existing tourist activities on the Arctic Circle Trail to be experienced in less extreme extends than now. In the future, the hiker does not have to walk all the way from Kangerlussuaq to Sisimiut, just as the sled tourist, the cross-country skier and the fatbike rider do not have to take the entire 160 km long route between the two cities. In the future, they can settle for e.g. half the distance and then be driven in a bus / car the other half. Or switch between these tourist activities along the way.

In addition to Arctic Circle Road securing the basis for hotel investments in Kangerlussuaq, Kangerlussuaq has, since the American base was abandoned in 1993, had an uncertain future. Every 5 years there have been announcements from the Greenland Government that Kangerlussuaq should be shut down when new airports were to be built elsewhere. It does not animate investments in expensive buildings and hotels to be depreciated over 20-30 years

if investors fear that Kangerlussuaq will be shut down in 5 years.

Kangerlussuaq's unique tourist potential has been utilized but doesn't have accommodation facilities on a par with the rest of Greenland. Accommodation capacity in Kangerlussuaq primarily consists of youth hostels in old American barracks, where owners can write off investments in a few years. Kangerlussuaq has only one hotel that is owned and operated by the Greenland Government. This means that tourism in Kangerlussuaq is not on the same level as the rest of Greenland, where there are more hotel accommodations than hostel facilities. In other words, Greenland has 'shot itself in the tourism-foot' by not providing the tourism industry with any kind of security for long-term investments in Kangerlussuaq. Arctic Circle Road will give investors in Kangerlussuaq the security for the future, which means that an accumulated investment backlog in hotels in Kangerlussuaq over 25 years will be realized. It will at the same time provide a quality boost in Kangerlussuaq,

and to the rest of the country, when wealthy and environmentally-conscious tourists will choose Kangerlussuaq in the future. The above-mentioned 3 major advantages to Arctic Circle Road are collectively a game changer, and no other infrastructure projects in Greenland can lead to such great advantages. The current conflict in Greenland between political parties, between regions, between companies, between cities and between citizens about the airport structure clearly shows that the existing proposals for infrastructure development are perceived as a zero-sum game. Some must withdraw for others to achieve. Arctic Circle Road is not expected to cause negative consequence for other existing infrastructure, but on the contrary is expected to provide 3 major advantages.

A business climate like this can attract investors to all of Greenland, because investors will not fear that their investment will be lost by zero-sum game like decisions, where some selected locations will be losers.



Private tourism accommodation investments along Arctic Circle Road

The current tourist accommodation capacity in the Kangerlussuaq-Sisimiut region comprises approx.

- » 750 beds in Kangerlussuaq, of which 170 at 'Hotel Kangerlussuaq' and the remaining 580 in hostels
- » 190 beds in Sisimiut, of which 148 at 'Hotel Sisimiut' and 'Sømandshjemmet' and the remaining 42 in hostels and apartments
- » 8 beds in trophy hunting cabin south of Kangerlussuaq
- » 100 beds in 8 municipal owned cabins on the Arctic Circle Trail
- » Private cabins at Kangerlussuaq's road network and tourist-accessible cabins at Sisimiut

The newly permitted trophy hunting cabins will bring 7 new cabins with room for a total of 58 accommodations in addition to guides, chefs and other staff. It has been a prerequisite for the allocation of the concession to the operator, so the concession is supposed to be taken back if they do not establish the cabins. The planned Arctic Circle Road has resulted in several local tourist operators in Kangerlussuaq and Sisimiut approaching Qeqqata Municipality to learn about

the possibilities of constructing hotels, lodges and cabins along the Arctic Circle Road and in Kangerlussuaq and Sisimiut. The municipality has an interest in knowing the tourist operators' plans, so that municipal planning can be carried out in a timely manner, so when the road is constructed, the possibilities for private follow-up investments in hotels, lodges and cabins as well as communication centres and locations is resolved.

The tourism operators' plans have been recorded in declarations of intent signed by the tourist operators and the mayor. Together, the tourist actors plan to construct a total of 838 beds when / if the road is realized. For competitive reasons, names of tourist operators and their potential investments and locations cannot be stated. Overall, the tourist operators want to establish 386 beds in connection with the current road network in Kangerlussuaq, where there are recently planned for areas for hotels, lodges and cabins by Russels Glacier, The Waterfall and Sugarloaf on the Ice Sheet Road. In addition, there is remaining space in the current cabin area by the harbour, and in new municipal plan addendum to be prepared in 2019, areas will be planned for new hotels at Kitchen Mountain (Køkkenfjeldet) next to the airport terminal and near Kellyville at the west



end of the current road in Kangerlussuaq. On Arctic Circle Road, primarily near Tasersuaq, the tourist operators plan to build 146 beds when the road is constructed. Municipal plan addendums for hotels, lodges and cabins along the road between Kangerlussuaq and Sisimiut were finally approved by the Qeqqata municipal council in February 2019.

In Sisimiut and at Aqqutikitsoq, tourist operators plan to construct 306 beds when Arctic Circle Road is constructed. Sisimiut city is continuously being developed by new municipal plan addendums, while planning for a concession area at Aqqutikitsoq and Ungalliup Qaqa been put out to tender based the municipal council's decision in November 2018.

The 838 new tourist accommodations are only provided by tourist operators with existing activities in Qeqqata Municipality. There have been inquiries from various outside investors who either want to enter current and ongoing projects or who are awaiting clarification about the future.

In addition to the above-mentioned accommodations, the many private cabins at the bottom of Kangerluarsuk Tulleq (1st Fjord) will be made accessible by the construction of road between Kangerlussuaq and Sisimiut. A road will provide tourists with safe access, so demand for rental of these cabins is expected to arise. In addition, there are considerations in Qeqqata Municipality to privatize the municipal cabins on the Arctic Circle Trail, that can be used free of charge, or at least those located on Arctic Circle Road. Overall, it will provide a foundation for even more paying overnight tourists.



Tourism on the Arctic Circle Road

The Arctic is a relatively expensive tourist destination because of the distances to the Arctic and internally in the Arctic between destinations. The tourists' daily consumption is higher in the

Arctic than in the rest of the world. In Iceland, a tourist per day uses DKK 2,478 according to 'Iceland Tourist'. In the report "Tourism Development and Growth through Changed Airport Structure", Ramboll reports that consumption in Svalbard and on the mainland in Norway is NOK 2,490 and NOK 2,114, respectively. Similarly, in 2011, the Transport Commission found that the tourists' consumption in Greenland was at least DKK 9,375 on a four-day trip in Greenland, corresponding to DKK 2,362.50 per day.

If the 838 new tourist accommodations have an occupancy of 50%, this means that tourists

could spend DKK 382 million each year, while in the Arctic Circle Road area (838 beds x 50% x 2,500 DKK / day x 365 days = DKK 382 million). However, it is likely that not all the tourist operators' plans are implemented. Either because they can't get their plans funded or they find that a competitor has similar plans and they don't think there is room for both. If it turns out that the tourist operators only establish 300 beds, the turnover from tourists in the region could be DKK 137 million. (300 beds x 50% x 2,500 DKK / day x 365 days = DKK 137 million).

In 2010-2012, the chairman of the Transport Commission operated with a rule of thumb that increased tourism consumption would generate half in increased GDP for the Greenlandic society. The 838 new tourist accommodations will increase tourism revenue by DKK 382 million and DKK 191 million in GDP each year, while 300 beds provide DKK 137 million in revenue and DKK 68.5 million in increased annual GDP. The 838 new tourist accommodations could lead to approx. 550 more employees, while 300 beds could lead to approx. 200 more employees, assumed a tourism turnover of DKK 700,000 generates a man-year in the industry.

New beds	Occupancy rate on 365 day/year	Tourism consumption DKK/day	New tourists*	Tourism consumption in DKK million	Annual GDP increase in DKK million	Turnover per employee in DKK million	Annual work or employees
838	50%	2.500	38.234	382	191	0,7	546
300	50%	2.500	13.688	137	68,5	0,7	196

*New tourists = new beds x occupancy rate x 365 days / 4 days per tourist.



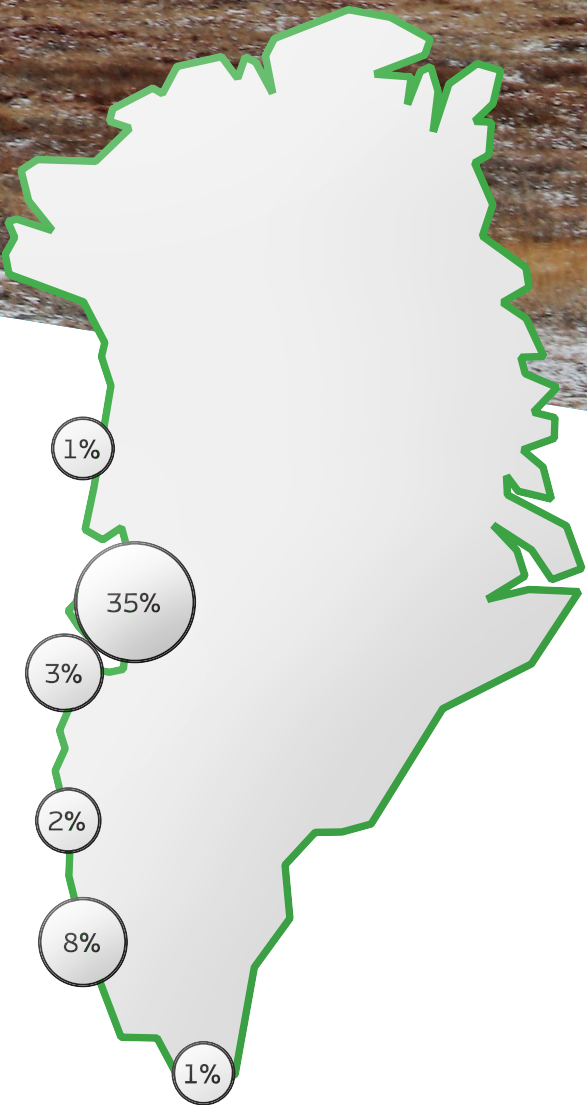


But the many new potential tourists in the Kangerlussuaq-Sisimiut region will not only experience this region's tourist attractions. They will, of course, travel to other destinations in Greenland.

Most of these tourists are expected to go to Ilulissat, where the Icefjord and UNESCO site are main attractions.

In the short term, relatively few are assumed to move on to destinations other than Ilulissat, as, for example, the developed destinations like South Greenland and the new UNESCO site are too far away. Or there is a need to develop an actual tourism industry such as Nuuk, Maniitsoq and the rest of Northern Greenland beyond Ilulissat. The new airport structure with longer runways in Nuuk and Ilulissat will increase the number of tourists choosing the combination of Arctic Circle Road and these two destinations when traveling into Greenland via Kangerlussuaq and out via Nuuk / Ilulissat - or the reverse tours.

Tourism Effect <i>838 / 300 beds</i>	North Greenland <i>- Ilulissat & Aasiaat</i>	Ilulissat	Aasiaat	Maniitsoq	Nuuk	South Greenland <i>incl. Paamiut</i>
% travel on to	1%	35%	3%	2%	8%	1%
Number of new tourists	137 / 382	4.791 / 13.382	411 / 1.147	274 / 765	1.095 / 3.059	137 / 382
Number of nights	548 / 1.529	19.163 / 53.527	1.643 / 4.588	1.095 / 3.059	4.380 / 12.235	548 / 1.529
Turnover DKK million	1,4 / 3,8	48 / 134	4,1 / 11,5	2,7 / 7,6	10,9 / 30,6	1,4 / 3,8



Socio-economic consequences

Arctic Circle Business and Qeqqata Municipality have prepared a socio-economic analysis on establishing the Arctic Circle Road. The analysis is based on the Ministry of Finance's Guidelines on preparation of socio-economic impact assessments from April 2015. The Ministry of Finance has provided valuable input for drafting the socio-economic analysis without having to be considered responsible for the actual analysis in any way or form.

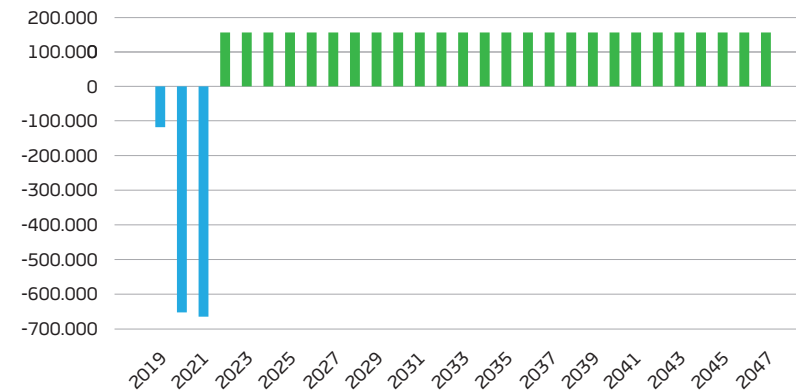
The analysis is based on a basic scenario with status quo and two alternative scenarios for the Arctic Circle Road based on the above statements in situations with 300 and 838 new tourist accommodations respectively. Both alternative scenarios are based on an expected occupancy rate of 50% and experience of the Transport Commission and international studies on tourism consumption in the Arctic. Furthermore, it is assumed that tourist accommodations costs DKK 1.5 million per bed to build incl. associated facilities such as restaurant and lounge and staff facilities. It is further assumed that there will be a need to construct housing at a cost of DKK 2 million per home to half of the new employees in tourism, while the other half is expected to have local housing. The timeframe is 30 years and the discount rate is 4%.

The socio-economic consequences are, as described, larger, the more hotels and cabins being built and the more tourists there are. In the first few years, Arctic Circle Road is to be constructed at a cost of DKK 500 million in a conservative estimate, followed by construction of hotels / cabins and employee housing. This results in high costs to both the public and private entities for the first three years, before a subsequently annual net income of DKK 177 million is expected from the increased tourism at 300 hotel / cabin beds and DKK 492 million at 838 beds.

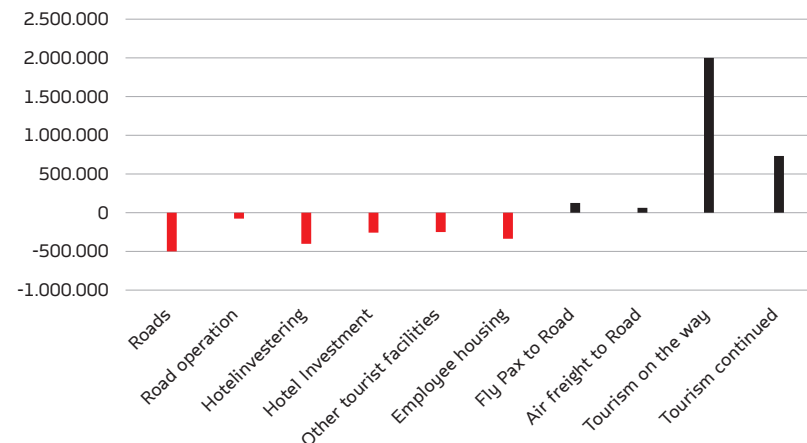
The distribution of the individual expenditure is, for the scenario with 300 beds, calculated to a socio-economic present value of DKK 528 million for road construction (when taking into account a 15% tax distortion loss, cf. the guidelines by the Ministry of Finance), DKK 100 million on operation and maintenance of the road, DKK 408 million for hotel construction, DKK 218 million for reinvestment in hotels, DKK 231 million for other tourism facilities and DKK 354 million for employee housing. On the revenue side, it is primarily the new tourism along the road generating DKK 1,987 million and further tourism to other regions in Greenland generating DKK 993 million, which constitute the large amounts. Moving existing traffic from aircraft to road only gives minor socio-economic benefits estimated to DKK 89 million for passengers and DKK 43 million for freight. Thus, it is not transport benefits that cause the large effects. It is the new tourism that causes the large part of socio-economic benefits.

Calculated in socio-economic present value, the annual value is decreasing over time; but all parts are larger both in terms of investment in the first three years and in terms of later income, for the scenario where hotels and cabins with 838 beds are to be built than with 300 beds. At 300 beds, the accumulated present value over the 30-year period is DKK 1.2 billion (solid line), while at 838 beds it is DKK 4.4 billion (dotted line).

Annual socio-economic value

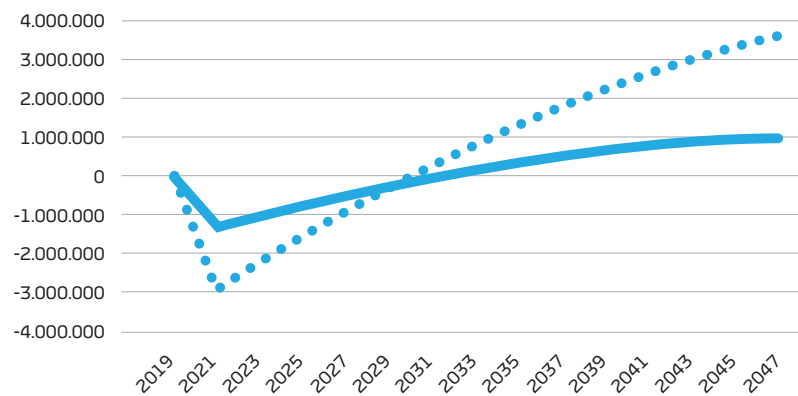


Socio-economic consequences

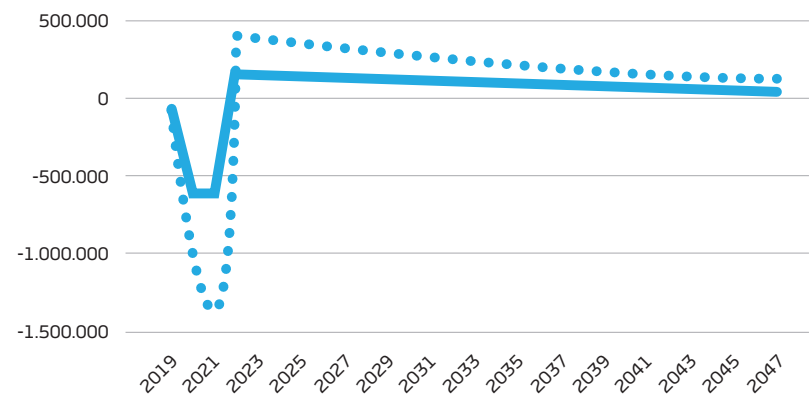




Accumulated socio-economic present value



Annual socio-economic present value



Arctic Circle Road and other analysis

Compared to other infrastructure projects, the socio-economic benefits of the Arctic Circle Road are very large, because it not only provides cheaper transportation. More importantly, the Arctic Circle Road entails new tourism both because of the opportunities made accessible between Kangerlussuaq and Sisimiut, but also because there has been no security for hotel investments in Kangerlussuaq for the last 26 years.

In comparison, the Airport Package (decision on construction, operation and financing of international airport in Nuuk and Ilulissat as well as regional airport in Qaqortoq) in Ramboll and Deloitte's calculations only provides cheaper transport for travellers to some destinations, while these calculations do not account for negative consequences, for Kangerlussuaq

and Sisimiut in particular, when Kangerlussuaq airport assumedly is transformed into a heliport or is completely disbanded.

Arctic Similarly, in 2011, the Transport Commission found that the road between Sisimiut and Kangerlussuaq was not economically viable. The Transport Commission's analysis framework meant that focus was exclusively on transportation benefits. The Transport Commission thus failed to look at the new tourism opportunities along a new road, just as the Transport Commission did not analyse the consequences of the possibility for hotel investments in Kangerlussuaq being significantly improved by the construction of a road.

The overall economic consequences cannot be clearly allocated to the three effects.

can clearly not reimburse a capital investment of up to DKK 500 million for construction of Arctic Circle Road and maintenance costs of DKK 6 million annually. In this sense, the data in the present report and the Transport Commission correspond. The Transport Commission just did not analyse Arctic Circle Road as a tourism experience but only as a transport route.

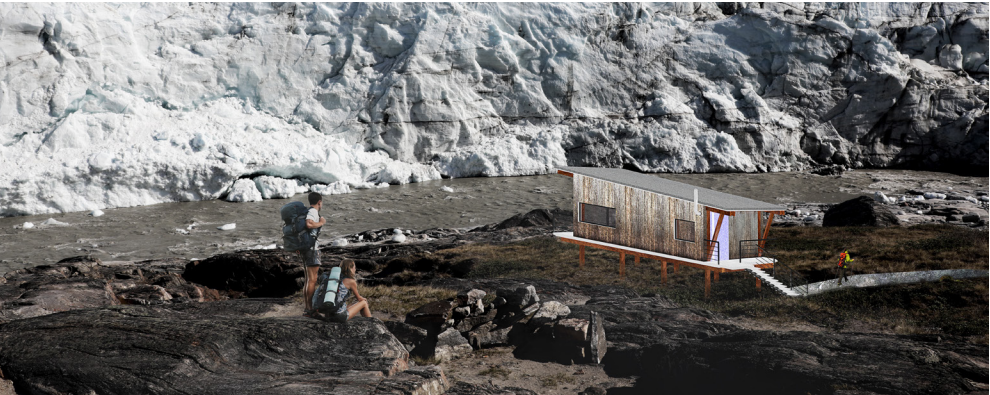
Arctic Circle Business and Qeqqata Municipality have carried out risk and sensitivity analysis in accordance with the guidelines from the Ministry of Finance. The overall conclusion is that Arctic Circle Road is an even very robust investment for the Greenlandic community. The most important limit values for the central parameters in the 30-year time frame are given in the following table:

	Road construction	Road maintenance	New beds	Consumption per tourist	Payback Time	Return Rate
838	DKK 4.7 billion	DKK 272 million	84	DKK 800 daily	11 years	14,9%
300	DKK 1.7 billion	DKK 82 million	84	DKK 1,287 daily	14 years	10,9%

Socio-economic consequences	Arctic Circle Road	The Airports Package (Rambøll / Deloitte)
Cheaper transportation	+	+ -
New tourism opportunities	+ +	
Lack of security for hotel investments in Kangerlussuaq	+ +	

Primarily, the distribution between new tourism opportunities and the achievement of (better) security for hotel investments in Kangerlussuaq are blending, as the Arctic Circle Road at the same time provides new tourism opportunities and investment security for Kangerlussuaq. Overall, these two effects can be aggregated to DKK 136 million yearly. On the other hand, the effect of cheaper transport can be more easily calculated separately. The annual benefits for the current passengers and freight volumes can be aggregated to DKK 6 million and DKK 3 million respectively These benefits totalling DKK 9 million yearly,

Arctic Circle Business and Qeqqata Municipality focus on openness and at the same time publish the underlying spreadsheet with this report, so that everyone can enter the prerequisites that they think are the right ones.



Budgetary consequences for the public sector

The public budgets are improved by increasing tax revenues, especially from personal taxes for the employees in the tourism industry. In the construction phase there will also be personal taxes from construction workers. Personal taxes are for Qeqqata Municipality distributed by 26% to the municipality of residence, 6% to joint municipal tax and 10% to national tax / National Treasury.

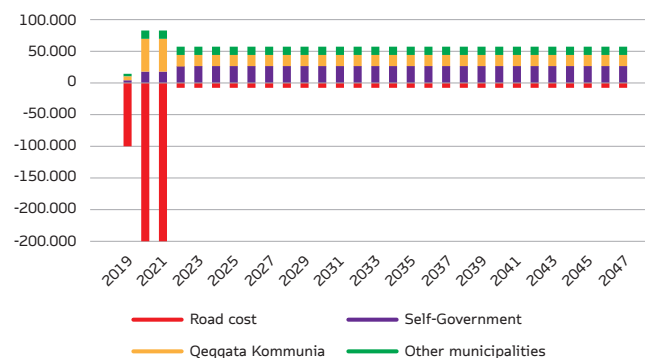
In addition to personal tax, the Government receives income via airport taxes and commodity taxes on tourism consumption.

Disregarding the costs of Arctic Circle Road's construction and operation, the public only receives income. The solid lines are the scenario with 300 beds and the dotted line is the scenario with 838 beds.

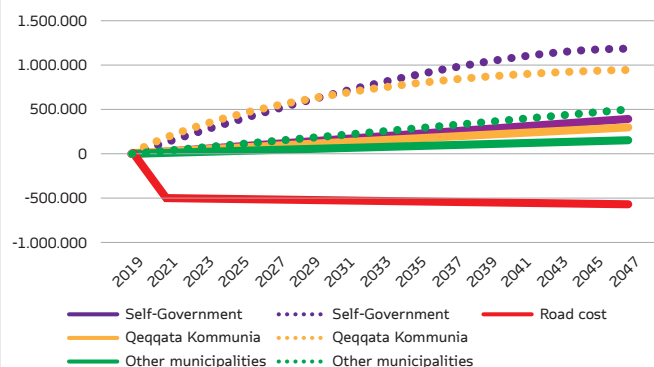
If the construction and operation of the road is financed equally between the Government and Qeqqata Municipality, the socio-economic consequences for the public entities will be as follows:



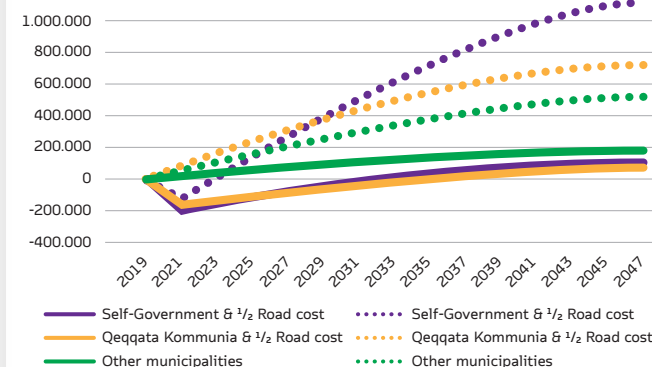
Annual public revenue



Cumulative present value of annual public revenue



Cumulative present value of annual public revenue



The investment in the road is thus economically viable for both the Government and Qeqqata Municipality, when shared equally. Other distribution keys will be open to negotiations between the two.

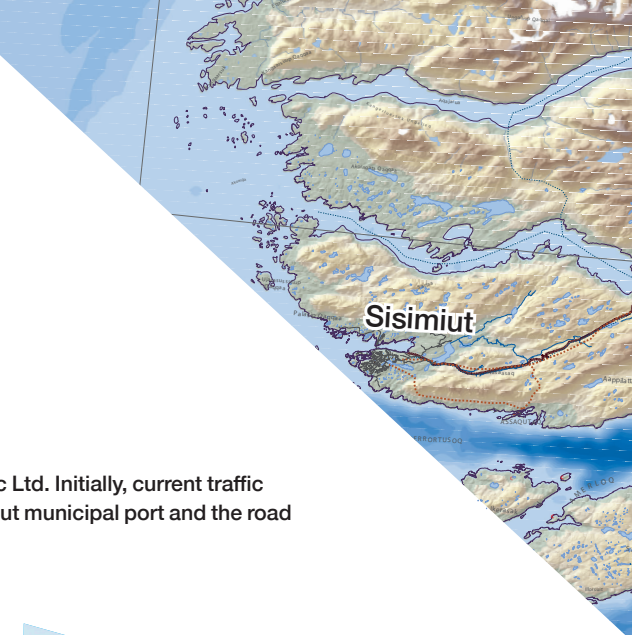
Arctic Circle Traffic Ltd

In May 2018 Qeqqata Municipal Council decided to set up a traffic company named Arctic Circle Traffic Ltd. Initially, current traffic infrastructure facilities in Qeqqata Municipality will be invested in the company. This will include Sisimiut municipal port and the road between the Ice Sheet and Kellyville at Kangerlussuaq.

Qeqqata Municipal Council has requested Greenland Government to transfer ownership of Kangerlussuaq Airport to the company as soon as possible. Or alternatively, to sell Kangerlussuaq Airport to Arctic Circle Traffic Ltd. Subsequently, it is intended that ownership and operational responsibilities of all public transport infrastructure facilities in the region are placed in Arctic Circle Traffic Ltd. Further it is intended that the company is to construct, own and operate Arctic Circle Road.

In recent years, several public limited companies have been set up focusing on traffic infrastructure facilities in Greenland, primarily Sikuki Nuuk Harbour and Kalaallit Airports. This follows a trend from e.g. the Nordic countries, where traffic infrastructure facilities are placed in public limited companies, to ensure long-term optimal

investments and boards with the necessary professional competence to implement these investments. Already in 2006, the former Sisimiut Municipality proposed a similar structure and prepared a Business Plan for 'Umimmak Traffic Ltd', but the idea was clearly before its time. The reason why it is a priority to include Kangerlussuaq Airport as the first traffic infrastructure facility must be seen in the light of lack of maintenance and investments in the preceding years. This is primarily about underestimated maintenance and renewal of the runway and missing investments in the airport hotel incl. the associated research hotel. Fortunately, investments in the hotel have been made in the last few years, which has led to a better economy for the hotel. Hotel investments in new restaurant and upgrading of rooms etc. seems to have been economically profitable.



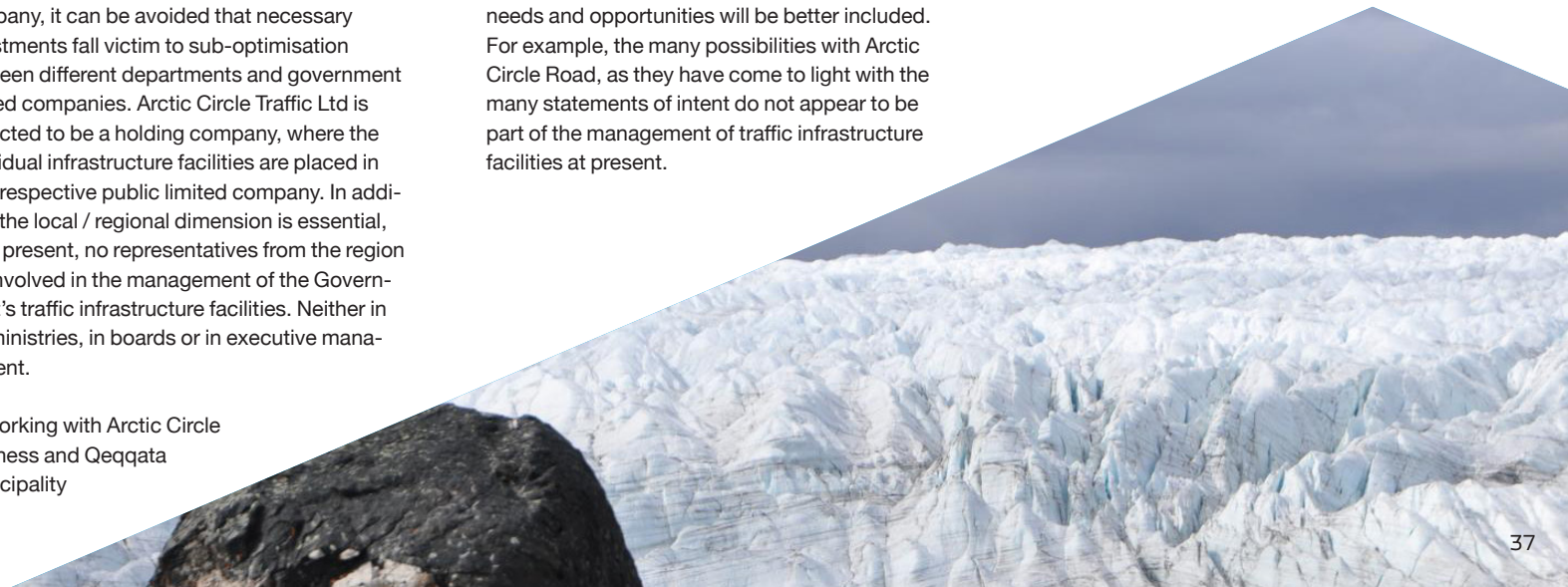


The lack of asphaltting and ongoing repair of the runway has led to great uncertainty about Kangerlussuaq Airport, where various Ministries of the Government and government owned companies and consultants each have prepared reports on the need for renovation. This lack of management and guidance leads to confusion and causes inactivity in relation to the necessary renovation and investment as well as, insecurity for the citizens and potential investors. Centre for Arctic Technology at the Technical University of Denmark has for many years studied the foundation of the runway and concludes in 2018 that the runway has very limited risk of permafrost problems except in the extreme western part. The American Airforce not only found the optimal locations for airports in Greenland. They also built excellent and very durable airports.

By transferring ownership and management of traffic infrastructure facilities to a public limited company, it can be avoided that necessary investments fall victim to sub-optimisation between different departments and government owned companies. Arctic Circle Traffic Ltd is expected to be a holding company, where the individual infrastructure facilities are placed in their respective public limited company. In addition, the local / regional dimension is essential, as at present, no representatives from the region are involved in the management of the Government's traffic infrastructure facilities. Neither in the ministries, in boards or in executive management.

By working with Arctic Circle Business and Qeqqata Municipality

or having representatives from the board of directors in Arctic Circle Traffic Ltd, the region's needs and opportunities will be better included. For example, the many possibilities with Arctic Circle Road, as they have come to light with the many statements of intent do not appear to be part of the management of traffic infrastructure facilities at present.



Development through collaboration and long-term planning

Arctic Circle Business (ACB) and Qeqqata Municipality have a very close collaboration on business and tourism development in the region. Arctic Circle Business is, as a member association, representatives of companies in the region, and the Qeqqata municipal council is as democratically elected representatives of the citizens.



Arctic Circle Business and Qeqqata Municipality have a long tradition of strong collaboration, where Arctic Circle Business advises entrepreneurs and start-up business, but also prepares and implements business and tourism planning for Qeqqata Municipality. The two entities work closely together on this task, both on a political level between ACB's board of directors and Qeqqata Municipality's political committees and on an administrative level between the ACB secretariat and the municipal administration.



The close cooperation between Arctic Circle Business and Qeqqata Municipality means that the municipal planning in Qeqqata Municipality has a strong focus on business development, cf. the many municipal plan addendums on tourism concessions, infrastructure expansion and accommodation facilities in the open country and entirely new business opportunities in the existing settlements, cf. cold climate test centre and cargo centre in Kangerlussuaq, a private heliport and cottage village in Sisimiut. Also, urban development of Sisimiut has also been fixed for several years.

For Sisimiut, a comprehensive plan for Akia north of the current urban area with potential for 5,000 new inhabitants was completed in 2004, and in 2007, surveys for expansion for an additional 10,000 inhabitants was planned on a site northwest of the airport towards the entrance to Kangerluarsuk Tulleq (1st Fjord). For Kangerlussuaq, there is generally enough areas around the airport for urban development,



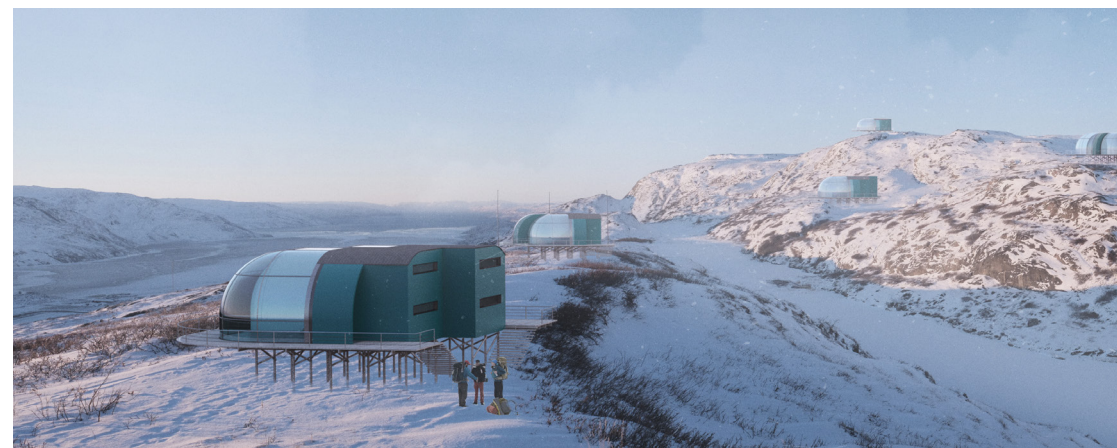
so the focus has so far been to plan for areas with land use for hotels, lodges and cabins along the extensive road network. However, for a few years, work has been done on planning for urban development on Kitchen Mountain (Køkken-fjeldet), which has been speeded up in recently after inquiry from hotel investors with an interest in building in this site with views of the Kangerlussuaq Fjord and not least the ice sheet.

It requires courage and determination from both the Qeqqata municipal council and the Arctic Circle Business board to implement these development initiatives, but the close dialogue between the two entities helps to ensure that municipal plan addendums do not contain unrealistic plans contrary to the real opportunities and needs. The co-operation structure ensures planning for continuous development in accordance with the interest and capacity of the business community and the political objectives. Not everything succeeds right away, as seen

with the wilderness lodge or car test area, but usually it succeeds at a later date or in a slightly different way than originally intended.

Arctic Circle Business and Qeqqata Municipality also cooperate closely with the region's educational institutions, for example, Arctic Circle Business has taken the lead in Greenland by increasing knowledge of the business community to children in public schools and their desire for further education. This has most recently been done in the nationwide CSR cooperation between primary and lower secondary schools and the business community in VIS-SIV and Qaqisa. In business development, the collaboration with Kalaallit Nunaata Teknikimik Ilinniartfik (KTI) and the Center for Arctic Technology (ARTEK) has been particularly fruitful.

Students, teachers and professors at KTI and ARTEK have set in a both very practical approach and a research-based approach to the



implementation of the technological educations in Sisimiut. This has meant that exciting student surveys have developed into specific project such as low-energy buildings, dormitory for science students and Greenlandic brick houses in Sisimiut, implemented between KTI, ARTEK, ACB and QM. The latest example of this is the upcoming indoor swimming pool in the mountains, where engineering students from ARTEK have studied various building technical aspects of mountain construction and potential locations in Sisimiut, while mining school students have taken samples of the mountain's physical feature for the selected locations. This spirit of collaboration has not gone unnoticed by external partners and foundations outside the region that support these processes. The many ARTEK student reports are available to everyone at <http://find.artek.byg.dtu.dk/pubs/frontpage/>. The close cooperation between KTI, ARTEK, ACB and QM also applies to the development in the open country. Related to energy, students have studied many different possibilities in collaboration with Nukissiorfiit and Qeqqata Municipality, including of course the region's

large hydropower potential but also solar, wind and tidal energy.

Especially Arctic Circle Road has been studied by KTI and ARTEK students, which has led to large level of knowledge about many aspects of the road and its construction. Local businesses have supported studies by providing students with their professional expertise, equipment and materials. This support to and cooperation with the educational institutions also means that the various routings have been thoroughly analysed for environmental challenges, construction materials such as gravel and sand, archaeological findings, etc. and potential solutions for likely problems have been investigated. Accumulation of knowledge is locally based.

A strong local foundation is also the starting point for openness to external partners both within business, investors and foundations etc. Local business, ACB and the municipality receive many inquiries from potential investors who have noticed the region's positive framework for business development.

"The road to freedom. Freedom is to be able to travel, exchange ideas and trade with the outside world without barriers. A road between Sisimiut and Kangerlussuaq is the fastest shortcut between the cities on the west coast and the great world. Kangerlussuaq can connect Greenland directly to Asia, North America and Europe. A safe and fast road link opens up for the export of fresh seafood, allowing tourists to quickly stopover visits in Greenland and Greenlanders directly connections to the rest of the World."

Professor Minik Rosing:

"Increase accessibility to a huge area and remove the bottleneck on freight transport. Build the road to Sisimiut. If Kangerlussuaq becomes difficult to operate in, I think the Americans are moving to Thule (and we are forced to follow). It will be a significant loss of turnover and revenue."

Professor Jørgen Peder Steffensen

"A road (to Kangerlussuaq) will undoubtedly have positive derivative effects for the shipping company and speed up development throughout the area."

Former CEO of Royal Arctic Line (RAL), Jens Andersen

"A road between Kangerlussuaq and Sisimiut will be the best investment in Greenland ever. A road will have huge potential for development."

Former CEO of Air Greenland, Finn Øelund

"A road route between Kangerlussuaq and Sisimiut is extremely interesting purely logistically. A road offers the opportunity to create a transport engine that will connect well for all of Greenland. At the same time, the road will provide good opportunities for the development of tourism and thus generate revenue."

Former CEO of Arctic Umiaq Line (AUL), Stig Bendtsen



Qeqqata Kommunia

