Golden Geopark of Lapland

APPLICATION
APPLICATION CONTACT PERSON:

Ms. Venla Karkola
Golden Geopark of Lapland Project Manager

Inari Municipal Business & Development Nordica
Sairaantie 3b
FI-99800 IVALO
Finland

Tel. +358 40 1379228
E-mail: venla.karkola@inari.fi
A. IDENTIFICATION OF THE AREA .......... 5

1. Name of the Proposed Geopark ................................................. 5

2. Surface Area, Physical and Human Geography
   Characteristics of the Proposed Geopark .................................. 5
   Special Characteristics of the Area ............................................ 5
   Inari ................................................................. 5
   Sodankylä .......................................................... 6

3. Organization in Charge and Management Structure
   of the Proposed Geopark ...................................................... 6

4. Application Contact Person .................................................... 7

B. GEOLOGICAL HERITAGE ..................... 9

1. Location of the Proposed Geopark ........................................... 9

2. General Geological Description of the Proposed Geopark
   Geological History of the Golden Geopark of
   Lapland and Descriptions of Geological Sites .......................... 10
   The Ancient Bedrock and Gold Deposits ................................. 10
   The Era of Weathering .................................................... 11
   The Ice Age and the Time of the Glaciers ............................... 12
   Glacial Meltwater Erosion ................................................ 13
   Glaciofluvial Landforms ................................................... 14
   Mires ................................................................. 14
   Bibliography ............................................................. 15

3. Listing and Description of Geological Sites
   within the Proposed Geopark ................................................. 16

4. Details on the Interest of these Sites in Terms of their
   International, National, Regional or Local value .................... 17

C. GEOCONSERVATION ............... 19

1. Current or Potential Pressure on the Proposed Geopark ........... 19
   Limits of the Geosites and Protection Status .......................... 19

2. Current Status in Terms of Protection of
   Geological Sites within the Proposed Geopark ...................... 21

3. Data on the Management and Maintenance of these Sites ........ 23
   Protected Areas in Finland ................................................. 23
   Strict Nature Reserves ................................................. 23
   National Parks ....................................................... 24
   Wilderness Areas ..................................................... 24
   Other Protected Areas: Mire Reserves .................................. 24

4. Protected Areas in the Proposed Geopark Area ..................... 25
   Sompio Strict Nature Reserve ........................................... 25
   Urho Kekkonen National Park ........................................... 26
   Lemmenjoki National Park .............................................. 26
   Hammastunturi Wilderness Area ....................................... 27
   Kettujoki, Sota-aapa and Nälkäaapa Mire Reserves ................. 27

D. ECONOMIC ACTIVITY & BUSINESS PLAN .......... 35

1. Economic Activity in the Proposed Geopark .......................... 35

2. Existing and Planned Facilities for the Proposed Geopark ......... 36

3. Analysis of Geotourism Potential of the Proposed Geopark ....... 38
   Cooperation with Partnership Companies ............................... 38
   Metsähallitus (Natural Heritage Services) ............................. 39
   Geological Survey of Finland ............................................. 39
   Inari-Saariselkä Tourism Ltd ............................................ 39
   Gold Prospector Museum ............................................... 39
   Gold Panning Competitions ............................................. 39
   Gold Prospectors Association of Finnish Lapland .................. 39
   Sámi Museum and Northern Lapland Nature Center Sílda ......... 39
   The Indigenous Sámi People ............................................ 41

4. Overview and Policies for the Sustainable Development .......... 45

5. Policies for, and Examples of, Community
   Empowerment (involvement and consultation)
   in the proposed Geopark .................................................. 45

6. Policies for, and Examples of, Public and
   Stakeholder Awareness in the Proposed Geopark .................. 45

E. INTERESTS AND ARGUMENTS FOR JOINING THE EGN / GGN .... 47

ANNEXES
A. IDENTIFICATION OF THE AREA

1. Name of the Proposed Geopark

2. Surface Area, Physical and Human Geography
   Characteristics of the Proposed Geopark
   Special Characteristics of the Area
   Inari
   Sodankylä

3. Organization in Charge and Management Structure
   of the Proposed Geopark

4. Application Contact Person
A. IDENTIFICATION OF THE AREA

1. Name of the Proposed Geopark

The name of the proposed Geopark is “Golden Geopark of Lapland”. The main themes of the proposed Golden Geopark of Lapland are the following: geology, gold history, gold, northern nature and local cultures, including the indigenous Sámi culture. When realised, the Golden Geopark of Lapland will be the first Geopark in Finnish Lapland and also the first of its kind in an arctic or sub-arctic climate. Also, at the moment there are no Geoparks this far north. The northern location is a special characteristic of the Geopark; it lives according to the changing seasons – as do all living things this far north.

2. Surface Area, Physical and Human Geography

Characteristics of the Proposed Geopark

The surface area of the proposed Geopark is 5125 km².

Special characteristics of the area

The location of the Geopark, north of the Arctic Circle, adds its own characteristics to the life and nature of the region. The four seasons are clearly distinct, and in particular the midnight sun in the summer and the polar night (in Finnish “kaamos”, ie. the time when the sun doesn’t rise) in the winter affect how people go about their business. At the same time, they also provide tourists with new and different experiences.

The ‘midnight sun’ means that the sun does not go down at all, and at the latitudes of the Golden Geopark the midnight sun lasts from the end of May to mid-July. For one and a half months, all of the nature enjoys continuous daylight, and most people and animals need less sleep during this period. The summer is indeed a time of explosive change in Lapland. During the polar night, the sun does not rise at all. This period lasts for about one month, from the beginning of December to the beginning of January. During this period of darkness, nature rests and some people can feel a similar need for rest. However, for most tourists this is a fine and exotic experience. At dark times, it is also possible to see northern lights.

Inari

Inari is the largest municipality in Finland. It has numerous lakes and thousands of islands, hundreds of fells, and diverse flora and fauna. The municipality of Inari was founded in 1876. Being Finland’s largest municipality by area, the region is home to 6,777 inhabitants, about 2,200 of whom are Sámi. Inari has a total area of over 17,000 km² and a water area of over 2,000 km², around half of which is accounted for by Lake Inari. There are altogether 10 948 km² of protected area in the municipality of Inari.

Tourism, when looking at the total impact, is the biggest employer in the municipality, and hundreds of thousands people visit the region annually. The municipality of Inari has three significant tourist service clusters – Inari, Ivalo and Saariselkä. At the moment, the largest of these centres is the resort of Saariselkä, which has a central location in the region; 32 km from Ivalo Airport, 85 km from the Russian border, 350 km from Murmansk, 250 km from the Norwegian border at Nuorgam, and 185 km from the Norwegian border at Näätämö. Flights from Helsinki to Ivalo take less than 1½ hours.

Inari is the only quadrilingual municipality in Finland. The languages spoken in addition to Finnish are Inari Sámi, Northern Sámi and Skolt Sámi. The Sámi people are the only indigenous people in Finland and the whole of the European Union.

Its central location in the north has made Inari over time a meeting place for different cultures and a natural route to the Arctic Ocean. Today, the Arctic Ocean corridor is a rising economic region of the future that supports the utilisation of the riches of the Arctic region and acts as a logistics hub in the north.

The municipal coat of arms consists of silver whitefish with golden reindeer antlers on a black background. The coat of arms symbolises the traditional sources of livelihood in the municipality: fishing and reindeer herding.
Sodankylä

The municipality of Sodankylä is located in the middle of Lapland, and its northern part belongs to the Geopark area. The area of the municipality of Sodankylä is 12,415 km$^2$, of which the water system covers 800 km$^2$. The total population is 8,878, of which Sámi people number about 300.

In the northern part of the municipality, there is the Tankavaara International Gold Prospector Museum, which in its 40-year history has collected the history of gold and gold prospecting in Lapland and worldwide. The Gold Prospector Museum is the initial originator of the idea of the Golden Geopark, and it will be a key member of the partner organisation of the Golden Geopark.

The municipality of Sodankylä is called the “Municipality of Stars”, and its coat of arms represents wilderness areas and nature. The star and the black colour refer to the long kaamos (the time when the sun doesn’t rise), and the figures below represent the flames of a fire.

3. Organization in Charge and Management Structure of the Proposed Geopark

The organisation of the Geopark is made up of the following elements: the operative management and personnel, the Management Group, partners and other interest groups.

The tasks of the operative management include taking care of the day-to-day activities of the Geopark, arranging events and providing information about them, as well as preparing presentations and projects. The operative management are also responsible for developing the activities of the Geopark according to the strategy approved by the Management Group, and also for coordinating, preparing and implementing the projects performed in the name of the Geopark organisation. The tasks of the operational management of the Geopark also include taking part in the activities of the Global and European Geopark networks.

The number of permanent personnel, in the first years, will be 1 person.

The Management Group is made up of the parties responsible for financing the Geopark, i.e. the municipalities of Inari and Sodankylä, Metsähallitus (Natural Heritage Services) and other possible financers. Besides financing, the responsibilities of the Management Group include creating strategies and making decisions about the more extensive projects. If needed, specialists are called in to help the Management Group. Permanent specialist members in the Management Group are the Geological Survey of Finland and Gold Prospector Association of Finnish Lapland.

The Geopark’s partnership network includes parties who take part in the activities of the Geopark, and also pursue their own businesses or other activities; that is, they produce activities and services for the Geopark network. These partners are committed to certain obligations, such as to spread information about the Geopark and to operate according to certain rules, including keeping their own infrastructure up to a certain level. On the other hand, they gain benefits, such as permission to use the Geopark logo in their marketing. Future partners may include, among others, the Tankavaara Gold Prospector Museum, Sámi Museum Siida, and Inari-Saariselkä Tourism Ltd. Also, enterprises and other organisations in the region may become partners. The Geopark Management Group makes the decisions about accepting partners.

Other Geopark interest groups can take part in the park’s activities, but their relationship with the Geopark is not as binding as that of the partners. The interest groups provide tourism services and other services and pursue other business activities. Interest groups also look after their own interests in the Geopark community. The interest groups include tourist companies and other enterprises (who are not partners), regional and national government, and other such parties.
Golden Geopark of Lapland Organisation

MANAGEMENT GROUP

Tasks: Responsibility for budget and strategy creation, approval body, partner approval

Members: Financers of the Geopark: Municipalities of Inari and Sodankylä, and Metsähallitus (Natural Heritage Services), and other possible financers, specialists are invited to support the work of the Management Group when needed

Permanent Specialist Members: Geological Survey of Finland and Gold Prospector Association of Finnish Lapland

OPERATIVE MANAGEMENT AND PERSONNEL

Tasks: Responsibility for daily activities of the Geopark, and for developing the Geopark, participating in activities of EGN, organising events and presentations, preparing and executing new projects

Members: Geopark operative management and personnel

PARTNERS

Tasks: Content production, business (possibility e.g. to use the Geopark logo), interpretation of the geosites, maintenance and development of the partner network

Members: Geopark enterprises, Inari-Saariselkä Tourism Ltd, Tankavaara Gold Prospector Museum, Sámi Museum Siida, also members of the Management Group when needed

INTEREST GROUPS

Tasks: Offering tourism and other services for visitors, business, cooperation with Geopark, possibility to apply the right to use the logo

Members: Tourist enterprises, other enterprises (who are not partners), regional and national government, other cooperation partners

4. Application Contact Person:

Ms. Venla Karkola
Golden Geopark of Lapland Project Manager

Inari Municipal Business & Development Nordica
Sairaalantie 3b
FI-99800 IVALO
Finland

Tel. +358 40 1379228
E-mail: venla.karkola@inari.fi
B. GEOLOGICAL HERITAGE

1. Location of the Proposed Geopark

2. General Geological Description of the Proposed Geopark
   Geological History of the Golden Geopark of Lapland and Descriptions of Geological Sites
   The Ancient Bedrock and Gold Deposits
   The Era of Weathering
   The Ice Age and the Time of the Glaciers
   Glacial Meltwater Erosion
   Glaciofluvial Landforms
   Mires
   Bibliography

3. Listing and Description of Geological Sites within the Proposed Geopark

4. Details on the Interest of these Sites in Terms of their International, National, Regional or Local value
B. GEOLOGICAL HERITAGE

1. Location of the Proposed Geopark

The area of the Golden Geopark of Lapland is 5125 km² and it is situated in Northern Lapland, c. 250 kilometres north of the Arctic Circle. Highway E75 runs close to the east edge of the Geopark, and there are only a few roads, as is the case for the whole of Lapland. There are several watercourses within the Geopark, such as the Ivalojoki and Lemmenjoki rivers, together with several other rivers and lakes, and also some parts of Lake Inari. Otherwise the area is a sparsely inhabited wilderness, the typical features of which are northern coniferous forests and wide mountain fells.

The Geopark is a part of two separate municipalities, Inari and Sodankylä. The park area begins south of the community of Vuotsö in Sodankylä, and parts of the Urho Kekkonen National Park and the Sompio Nature Reserve are also in the south part of the area. In the north the area borders with the Pielpajärvi Wilderness Church located north of the village of Inari. The church is the northernmost site within the Geopark. The west part of the area contains parts of the Lemmenjoki National Park, and also the many gold historical sites of the Lemmenjoki region are there. In the centre of the park area is another important concentration of sites, the Ivalojoki river valley, and this is also a part of the Hammastunturi wilderness area.

The longitude and latitude coordinates are as follows:

West 25°24′8″E
North 69°9′47″N
East 27°54′37″E
South 67°51′49″N

The enclosed map shows the exact location and area of the Geopark.
2. General Geological Description of the Proposed Geopark

Geological history of the Golden Geopark of Lapland and descriptions of geological sites

Peter Johansson
Geological Survey of Finland

The Golden Geopark of Lapland is situated in northern Finnish Lapland, 250–300 km north of the Arctic Circle. It is one of the most unique wilderness areas in Northern Europe. The heartland of the area comprises dozens of gently rounded, rocky, barren fell tops above the timberline. Most of the tops reach an elevation of 500 metres. The highest fell, Morgam-Viibus is 599 metres high. The north-western part is part of Lemmenjoki National Park, which was established in 1956. With an area of 2,855 km², it is the largest in Finland. The eastern part is in Urho Kekkonen National Park. The central area is in the Hammastunturi wilderness area. The main water divide, which separates the waters flowing into the Baltic Sea from those flowing into the Arctic Ocean, is situated in the southern part of the area.

Regional differences in vegetation are remarkable. The southern part is characterized by spruce- and pine-covered fells interspersed with vast, watery bogs. The pine-covered hilly area is crossed by the river valleys of Ivalojoki and Lemmenjoki and their tributaries. The north-eastern part around Lake Inari is lacking in spruce forests, because it is outside of the northern limit of continuous spruce forests. The coniferous forest zone reaches an elevation of 300–350 metres, depending on the steepness and direction of the slope. On warm south-west-facing slopes, the forest reaches higher than on cold northern and north-eastern slopes. The exposed fell tops begin at an elevation of about 360–400 metres. Between them and the coniferous forests, there is a narrow zone of fell birch scrub.

Rivers flow in ancient preglacial valleys that are part of a fractured zone in the Precambrian bedrock. The Ivalojoki river begins from the watershed near the Norwegian border, and stretches some 180 kilometres through wilderness areas, merging with dozens of small streams and tributaries along its length. For a distance of some ten kilometres between the tributaries of Appisjoki and Sotajoki, Ivalojoki flows through a canyon up to 150 metres deep (Fig 1). The flow of the river alternates between slow-moving pools and raging rapids. The most significant placer gold deposits can also be found there. After the gold-mining area, the river forges ahead in the wide valley towards Lake Inari. In the Lemmenjoki area, the landscape is dominated by the Maarestatunturit and Viipustunturit fell ranges. The Lemmenjoki canyon, with the Lemmenjoki river flowing along its floor, crosses the fell area. The river turns into a ribbon-like chain of lakes.

The ancient bedrock and gold deposits

The Precambrian bedrock belongs to the Granulite Zone of Lapland. It arches from northern Norway through the Geopark area and on to the Kola Peninsula in Russia. The most common rock type is quartz-feldspar gneiss, which is pink and grey in colour. The main constituents of the quartz-feldspar gneiss are quartz, microcline, biotite, graphite and garnet, a distinctive dark red mineral. The rock originates from layers of sediment built up on the ancient seabed and from volcanic ash and lava, which, during orogenesis some 1,900 million years ago, ended up deep in the Earth's crust under tremendous forces of pressure and heat. Thereupon a high mountain chain was formed. The rock's present-day mineral content and its strong schistose appearance were formed under those conditions. They are especially visible in the barren rocks of the fells and in the rock walls of the Ivalojoki and Lemmenjoki canyons. The granulite zone also consists of areas of quartz-diorite gneisses and hyperstene amphibolites. In the south, the area on the margins of the Granulite Zone consists of granitic gneiss and banded hornblende gneiss. Granite of the Nattanen type intruded on the older rocks about 1,750 million years ago. The main constituents of the granite are found to be microcline showing amounts of plagioclase and quartz. The single dark constituent of the rock is brown biotite, which has partly been altered to green chlorite. An exceedingly regular, perpendicular jointing and a horizontal banking are characteristic of this rock.

Gold deposits in the bedrock also formed gradually over the course of millions of years. Recrystallisation of the bedrock evidently formed lenses consisting of quartz, sulphides and gold. Where there was magma, there were hot hydrothermal solutions capable of dissolving gold, which was present in small quantities in the surrounding rock. As temperatures dropped, the gold precipitated from the solutions, mainly in metallic form, along with the quartz. It seems that the only auriferous rock types in the area are quartz-carbonate veins and an arsenopyrite-bearing shear zone found at Harrioja.
The era of weathering

Over a period of hundreds of millions of years, this mountainous region eroded down to its roots, forming a peneplain. The birth of the Atlantic Ocean and the uplift of the Scandes mountain range in Norway and in Sweden some 30–50 million years ago were also echoed in the form of block movements in Finnish Lapland. Fells were formed from the rising bedrock horsts. Fracture zones and faults formed between them and appear today as valleys, e.g. along the Ivalojoki, Tolosjoki, Lemmenjoki and Sotajoki rivers.

The weathered bedrock is mechanically fractured and chemically altered rock. It is widespread in the depressions and lowlands of the central and southern parts of the area, where the glacial erosion was exceptionally weak. The boundary between the weathered bedrock and the underlying fresh bedrock alternates, and in the fracture zones weathering extends to tens of metres. It is mostly covered by glaciogenic deposits, 1–3 m in thickness. In some places, the weathered bedrock is so loose that it can even be dug with a shovel. The weathering process took place millions of years ago, possibly as early as during the Paleozoic and Mesozoic eras or during the Paleogene, approximately 25–50 million years ago, while the climate was also favourable for weathering. Gold in the bedrock was also freed up during the weathering process. The average gold content of the weathered bedrock (11 ppb) is higher than in solid bedrock (0.2 ppb). The gold content seems to be dependent on the occurrence of graphite. The weathered quartz-feldspar gneisses, which are often rich in graphite, have a particularly high gold content, although the solid graphite-rich rocks are devoid of gold. Graphite seems to form an effective gold trap during the enrichment of gold due to weathering processes.

The tops and slopes of the fells are covered by block fields, consisting of bedrock that has been fractured in situ by physical weathering. There, the climate is harsh and frosty nights are common even in summer. Due to the variations in temperature, the surfaces of the rock and boulders alternately expand and shrink. Releasing stresses create fractures, into which rainwater and meltwater run. The cycles of freezing and melting widen the fractures, and eventually a lump will fall off the rock or the boulder will break into jagged pieces. This phenomenon is called frost weathering. On the slopes, there are weathered rocks in different phases of development. There are smooth, unweathered rock surfaces and slabs that already have outline marks of a future fracture. There are also pieces of rock which have broken off, but are still in their place, and jagged boulder fields covering the sides and tops of fells. Bit by bit, the entire top of the fell becomes covered in angular blocks and stones.

Locally on the tops of the fells, as on the Nattaset fells and on Patatunturi, tor-like forms can be found sticking up above the surroundings. These are rocky remnants which consist of the most durable parts of the granitic bedrock. The broken rock around them has been removed by erosion. The tors were formed before the last period of glaciation, since the post-glacial erosion has not been rapid enough for them to form. They remained intact under the ice sheet, while the broken rock around them has been transported away (Fig. 2).
The Ice Age and the time of glaciers

Over the last 2.5 million years, the area has been covered in continental ice sheets several times. The youngest glaciation period (the Weichselian glaciation) started more than 115,000 years ago. It consisted of several cold stages of variable length, during which the area was covered in ice. Between these periods of cold, there were ice-free stages during which the climate was cooler than at present. The Weichselian glaciation reached its maximum about 18,000–20,000 years ago, when the northern and north-eastern parts of Europe were covered by the ice sheet. In Lapland, the ice sheet was over 2 km thick.

The glaciers flowed slowly. They carved and eroded the rock, weathering the bedrock and previously deposited layers of soil. They carried with them rocks that broke off during the process, re-depositing them to form the till that covers the present-day bedrock. Gold grains loosened from the bedrock and weathered bedrock also mixed in with the till. Basal till is debris that was transported at the base of the glacier, where it was packed into a compact mass with variable grain size. Over vast areas, basal till covers the bedrock in the form of a blanket with variable thickness and no landforms of its own. On the slopes of fells, the till cover is thin. In lowlands and valleys it is thickest. Some of the debris transported by the glacier rose to its surface. When the underlying ice melted, this material was deposited to form supraglacial till on top of the basal till. Supraglacial till is better washed and sorted and can therefore easily be distinguished from basal till. In the northern part of the area, basal and supraglacial till together form hummocks and ridges called hummocky moraine. There are also ridges 0.5–2 metres high of basal till, called flutings, which are oriented in the direction of ice flow.

In the final stage of the last glaciation, the glacier was melting. Initially, the tops of fells appeared from beneath the glacier, forming ice-free nunataks above unbroken ice fields. As the glacier grew thinner, ever-wider expanses of fell areas were revealed. The edge of the glacier finally broke off into ice lobes, which covered the valley floors. The area deglaciated around 10,500 years ago. In front of the ice lobes, meltwater began to form ice-dammed lakes between the ice margin and the slopes of the fells. Initially, they were small marginal ice lakes, the water of which flowed between the tops of the fells to the north or north-east. The water level sank as the glacier receded and new meltwater channels opened under the margin of the ice. The location and extent of these ice lakes have been mapped, e.g. in the Kiilopää area in the light of meltwater channels and shorelines.

The rock wall of the Ravadasköngäs waterfall shows potholes and pothole-like formations created by the melting waters from the glacial period.
Glacial meltwater erosion

Various landforms created by meltwater are closely associated with the deglaciation phase. The vast bedrock exposures, steep-sided gorges and channels are erosional features formed by the meltwater. The most conspicuous of these are the overflow channels, which cross the otherwise gently-rounded fells in the form of sharp cuts. They were formed at the stage of ice sheet melting when the fell tops were beginning to show through the ice. Meltwater gathered as a marginal ice lake between the margin of the ice and the fell slope, and was discharged to the north-east across the fell ridge at the lowest point. The erosion of flowing water formed a deep gorge in the bedrock. There are seven channels north of the Kiilopää fell at different threshold levels. They functioned as consecutive spillways for the ice lake (Fig. 3). On the basis of the shape and dimensions of the spillway, it is possible to get an idea of the strength and duration of the stream that flowed along it. The formation of the lake was favoured by strong melting of the ice and by a large volume of meltwater coming from the sub-glacial meltwater conduit. Meltwater erosion was at its most marked when a new spillway opened and the level of the ice lake dropped to that of the spillway threshold. The opening of new spillways under the margin of the ice sheet, below the preceding ones, led to a successive lowering of the water levels. If the ice margin retreated approximately 100–140 m per year, it is estimated that each ice lake stage lasted some 5–15 years. The spillways joined to form extra-marginal channels more than 15 m deep, collecting the water and leading it northwards to the Tolosjoki river valley and further to the Barents Sea.

The gorge of Kulmakuru, with steep edges, cuts into the Harripää fell ridge. It was formed under the glacier as a powerful sub-glacial meltwater stream passed over the fell ridge. The erosion capacity of the flowing water was due to the strong hydrostatic pressure in the meltwater conduit. The angular form of the craggy gorge is result of the crossing fracture zones in the bedrock. After the Ice Age, the bottom of Kulmakuru was covered by boulders rolling down the slopes. Its bottom is very difficult to cross.

In the Ivalojoki valley, potholes are found under the Kultala suspension bridge and at the Saarnaköngäs rapids (Fig. 4). They are hollows 0.1–1.2 metres deep with rounded bottoms, carved into the rock by stones transported by swiftly streaming glacial water. In Lemmenjoki, the finest pothole-like forms are near the mouth of the Ravadasjoki river, where there are the Ravadasköngäs canyon and a famous cascade, which is one of the best-known local excursion sites.

On the slopes of Teräväkivenpää and Jäkäläpää, lateral drainage channels 1–2 metres deep can be seen. During the deglaciation 10,400 years ago, the supraglacial meltwater streams were concentrated at the boundary between the ice margin and the sloping till-covered fells and eroded there a distinctive series of lateral channels. At high elevations, they are 100–250 m long, and shallow (less than 0.5 m deep). The vertical distance is 1.5–2 m. At low elevations, they are distinct, 1–2 metres deep, and the vertical distance is 10–20 m. The lateral meltwater channels are of great importance in the study of deglaciation, since they help construct the position of the ice margin in great detail, which gives a picture of the inclination of the ice sheet, its surface gradient and thinning. The gradient ranged from 2.0 m near the top of the fell to 3.0 m for each 100 metres in the lower areas, indicating steepening of the ice margin at its snout. The ice margin thinned by approximately 1.2–3.4 m per year. The recession of the ice margin varied between 120 m and 170 m per year.
Marginal and extra-marginal channels are deeper and wider than lateral drainage channels. Marginal channels were formed between the edge of the melting ice sheet and the fell slope. The extra-marginal channels formed outside the ice sheet and they followed the slopes in the terrain. From their shape, it can be concluded that large volumes of meltwater that had broken out from the glacier margin or from ice-dammed lakes flowed through them. Today, the channels are either dry or small streams flow in them. They form channel networks which describe the gradient of the ice surface, its thinning out and the retreat of its margin.

Glaciofluvial landforms

The most common depositional meltwater forms are the eskers, which consist of sand and gravel. They were deposited in the glacial meltwater conduits at the bottom of the ice sheet. The debris was washed, rounded and sorted according to the velocity of the stream. As a result, sharp-crested eskers with steep sides were formed. The esker sequences reflect the meltwater conduit running from within the continental ice sheet towards its margin. The most remarkable esker sequences are those of Ivalojoki and Lemmenjoki. The latter follows the Lemmenjoki River valley. In places it rises into a sharp, high ridge over 30 m tall, in others it splits up into a rolling kame landscape consisting of several parallel gravel ridges.

The meltwater streams that formed during the last glaciation, as well the ones before it, played a significant part in enriching the gravel deposits along the shores and in the channels of the Ivalojoki river and its tributaries to the south, and in the Lemmenjoki area, with gold nuggets from till. Such gold deposits are called placers. They are the result of being repeatedly eroded, transported and deposited by the flowing water. Placers do not contain gold throughout; rather, separate pockets of gold-rich areas or layers can be found in them.

Glaciofluvial material was also deposited in the ice-lake basins. Poorly-sorted outwash deltas and sandurs, such as the Kaarreoja outwash delta, were formed as the water level of the ice lake suddenly sank and the discharging meltwater deposited a delta-like accumulation of gravel at the mouth of the outlet channel. The most extensive meltwater deposits are the valley trains, which are found in the Ivalojoki river valley as deposits tens of metres thick. They consist of gravel and sand carried by the glacial river and deposited on the bottom of the river valley, reaching the surface level of the ancient Lake Inari. When the water level lowered, Ivalojoki began to carve its channel in the valley train. High sandy terraces were left along the riverbanks. The flowing water shaped them, creating meanders near the village of Ivalo. The water flowing in the river channel eroded the outer banks of the river bend and formed steep cut banks. On the opposite bank of the river, on the inside of the bend, the river deposited the material, forming sandbars. They are often free of vegetation and still serve as proof of the continuous effect of the water flow. During the period following deglaciation, the wind blew with great force from the glacier. It lifted sand from the eskers and sandy beaches, shaping it here and there into curved dunes. Sandstorms were common during those days, and the sparse vegetation was not able to bind the sand. The dunes of today are mostly covered in vegetation.

Mires

Peat deposits are concentrated in low-lying areas favourable for the development of wetland ecosystems and palustrial vegetation. Wide aapa mires belong to the aapa mire zone of Forest Lapland. The mire area spread out over the upper course of Ivalojoki and its southern side. The central parts of mires are often treeless fens, which are characterised by large, wet and, in places, impenetrable flarks separated by drier strings. The marginal edges of mires consist of bogs with stunted pines or swamps with spruce and birch. Mires were created in the depressions of the terrain and in waterlogged areas that were left as the glacier melted. Remnants of dead plants, such as horsetail (Equisetum), mosses (Sphagnum) and sedge (Carex) started to accumulate on the humid substrate and, over a period of thousands of years, deposits of peat several metres thick were formed by the process of huminification. The main peat type is sedge peat.

Pollen studies from the mires show that, after deglaciation, herbs and dwarf shrubs invaded the land liberated from the ice. Birch forests spread and flourished for some centuries until they were supplanted by pine ca. 8,000 years ago. This stage of vegetation lasted until about 6,500 years before the present. The timber line attained its northernmost position, and the proportion of fells with barren tops was at its lowest. The most favourable postglacial climatic stage lasted for 1,500–2,000 years. About 4,500–5,000 years ago the climate cooled significantly and this trend has persisted to the present day. Spruce spread from the south-east about 3,000 years ago. It altered again the type of forest in the area. The present vegetation zones became established about 2,500 years ago.
Bibliography:


3. Listing and Description of Geological Sites within the Proposed Geopark

The geological sites are situated along the Ivalojoki river and its tributaries, in the Lemmenjoki region, and along both sides of highway E75 for the entire length of the Geopark from south to north. More information about each geosite can be found in the annexes.

1. The Lihr rock and its bedrock outcrops
2. Potholes at Ivalojoen Kultala
3. The Ivalojoki esker at Toloskoski rapids
4. The Saarnaköngäs rapids
5. The Ainikkaharju esker
6. The Puoliväli spring
7. The Kulumakuru gorge
8. The Kilopää ice lake and its spillways
9. The Rumakuru gorge
10. The quartz vein at Hangasoja
11. The Nälkääapa mire
12. The Kopsusjärvi delta
13. Lateral drainage channels at Teräväkivenpää
14. Melt water erosional forms on Tankavaara fell
15. Tor formations at Pyhä-Nattanen
16. Block field covering the Nattaset fells
17. Karhunpesäkivi erratic
18. Hummocky moraine area at Kirakkaköngäs
19. The Rahajärvi collapsed cliff
20. The Sotkajärvi esker and kames
21. The Ravadasköngäs waterfall
22. A cascade at the mouth of Morgam-Viibus stream
23. Talus deposit on the shore of Morgamjärvi lake
24. Lateral drainage channels on the top of the Jäkäläpää fell
4. Details on the Interest of these Sites in Terms of their International, National, Regional or Local value

The Kiilopää ice lake and its spillways are one geosite which has international significance in geology and geomorphology. During the latest deglaciation period about 10,400 years ago, there an ice lake became dammed between the ice margin and the slope of the fell. The ice lake discharged its waters over the fell range. North of Kiilopää fell, there is a series of gorges at heights between 446 m and 336 m which functioned one after the other as spillways for the ice lake. The spillways are 3–10 m deep with steep, craggy edges. They have been eroded into the bedrock by powerful meltwater streams.

Two academic dissertations (doctoral theses) and one publication have been published about the subject:


In the region there are five other geosites which have national significance. They are: 1) the tor formations at Pyhä-Nattanen, granitic rock outcrops more than five metres high that rise abruptly from the rounded summit of the fell; 2) the Ravadasköngäs waterfall, a seven-metre-high waterfall with potholes hidden deep in the gorge; 3) The subglacial Lemmenjoki esker with its steep slopes and sharp crest; 4) tafoni weathering and a cave in the Karhunpesäkivi boulder; and 5) the Kulmakuru gorge, which is a gorge 20 metres deep formed by a powerful subglacial meltwater stream. There are also scientific publications about all these sites.

Potholes at Ivalojoen Kultala and at the Saarnaköngäs rapids, the moraine landscape at Inari, a talus deposit on the shore of Morgamjärvi lake, lateral drainage channels on the tops of the Jäkäläpää and Teräväkivenpää fells are examples of regional or local value, as are localities along the geological nature trail at Tankavaara and lisakkipää, and the quartz vein of Hangasoja and mine shafts along the Gold Tail at Laanila.
C. GEOCONSERVATION

1. Current or Potential Pressure on the Proposed Geopark
   Limits of the Geosites and Protection Status

2. Current Status in Terms of Protection of Geological Sites within the Proposed Geopark

3. Data on the Management and Maintenance of these Sites
   Protected Areas in Finland
   - Strict Nature Reserves
   - National Parks
   - Wilderness Areas
   - Other Protected Areas: Mire Reserves

   Protected Areas in the Proposed Geopark Area
   - Sompio Strict Nature Reserve
   - Urho Kekkonen National Park
   - Lemmenjoki National Park
   - Hammastunturi Wilderness Area
   - Kettujoki, Sota-aapa and Nälkäaapa Mire Reserves

   Everyman’s Right

   Other Acts Concerning the Geopark Area
   - The Antiquities Act
   - The Land Use and Building Act
   - The Mining Act

4. Listing and Description of Non-Geological Sites and How They Are Integrated into the Proposed Geopark
   Gold History Sites
   The Pedagogical Aspect and Educational Value of Tankavaara Gold Prospector Museum

   Preservation of Gold History
   - Collections
   - Inside Exhibitions, the Outdoor Museum Area, and Exhibitions Online
   - Renovation Work, Inventorying and Research on Location

   Other Sites
   Information Centers
C. GEOCONSERVATION

1. Current or potential pressure on the proposed Geopark

The main purpose of establishing a Geopark in the Northern Lapland is to increase and develop nature tourism, especially summer tourism, in the Geopark area. By creating a connection between the scientific world and the wider audience visiting Lapland, the proposed Golden Geopark of Lapland will create new possibilities to the local entrepreneurs.

Limits of the Geosites and Protection Status

The geological sites are marked off into areas of 1-2 hectares (1 hectare = 2.471 acres). The purpose of the marking off is to have a clear picture of the site, e.g. for the purposes of tourism and for making guidance more clear. In the future, a clearly defined area is useful; for instance, in situations in which there is a need to examine the condition of the geological sites (e.g. in the case of queries by the network, or for own estimations). Thanks to the boundaries, it is easy to know in such a case, which exact area belongs to the one being examined.

Marking off of the geological sites does not mean that they are protected areas. The fact that an area is a Geopark (or a Geopark application has been made) does not increase the protection status of the area, nor does it reduce it. The status of a Geopark cannot be used as a basis for applying for any kind of a sanctuary, and it is not used as added value in order to create a protection area. In case there is a drive at creating a protection area status for sites or areas within the limits of the Geopark, such matters are handled through normal official channels outside the discussions concerning the Geopark project. Also, there are no intentions to resist any form of land use, or any process to acquire permits, by taking advantage of the Geopark status of the entire area, or that of a single site.

There are areas within the area of the Geopark, which are protected according to Finnish laws and practices. For the part of the Golden Geopark of Lapland these include two National Parks, a Nature Reserve, a Wilderness Area, and Mire Reserves. These protected areas have their own regulations laid down in Finnish legislation, as well as their own management plans. It is in the interests of the Geopark, its partners and visitors, that tourists visiting the Geopark are informed about these regulations.

A splendid view from the Joenkinlinen ridge to the Lemmenjoki river valley.
2. Current Status in Terms of Protection of Geological Sites within the Proposed Geopark

The following table describes the relationship of geosites and protected areas in the proposed Geopark. All sites are located in state-owned land.

### Geological Sites

<table>
<thead>
<tr>
<th>Geosites</th>
<th>Protected Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The Lihr rock and its bedrock outcrops</td>
<td>Hammastunturi Wilderness Area</td>
</tr>
<tr>
<td>2. Potholes at Ivalojoki Kultala</td>
<td>Hammastunturi Wilderness Area</td>
</tr>
<tr>
<td>3. The Ivalojoki esker at Toloskoski rapids</td>
<td>Hammastunturi Wilderness Area</td>
</tr>
<tr>
<td>4. The Saarnaköngäs rapids</td>
<td>Hammastunturi Wilderness Area</td>
</tr>
<tr>
<td>5. The Ainikkaharju esker</td>
<td>Hammastunturi Wilderness Area</td>
</tr>
<tr>
<td>6. The Puoliväli spring</td>
<td>Hammastunturi Wilderness Area</td>
</tr>
<tr>
<td>7. The Kulmakuru gorge</td>
<td>Hammastunturi Wilderness Area</td>
</tr>
<tr>
<td>8. The Kiilopää ice lake and its spillways</td>
<td>Urho Kekkonen National Park</td>
</tr>
<tr>
<td>9. The Rumakuru gorge</td>
<td>Urho Kekkonen National Park</td>
</tr>
<tr>
<td>10. The quartz vein at Hangasoja</td>
<td>-</td>
</tr>
<tr>
<td>11. The Nälkääapa mire</td>
<td>Urho Kekkonen National Park</td>
</tr>
<tr>
<td>12. The Kopsusjärvi delta</td>
<td>Urho Kekkonen National Park</td>
</tr>
<tr>
<td>13. Lateral drainage channels at Teraväikivenpää</td>
<td>Urho Kekkonen National Park</td>
</tr>
<tr>
<td>14. Melt water erosional forms on Tankavaara fell</td>
<td>Urho Kekkonen National Park</td>
</tr>
<tr>
<td>15. Tor formations at Pyhä-Nattanen</td>
<td>Sompio Strict Nature Reserve</td>
</tr>
<tr>
<td>16. Block field covering the Nattaset fells</td>
<td>Sompio Strict Nature Reserve</td>
</tr>
<tr>
<td>17. Karhunpesäkivi erratic</td>
<td>-</td>
</tr>
<tr>
<td>18. Hummocky moraine area at Kirakkaköngäs</td>
<td>-</td>
</tr>
<tr>
<td>19. The Rahajärvi collapsed cliff</td>
<td>Lemmenjoki National Park</td>
</tr>
<tr>
<td>20. The Sotkajärvi esker and kames</td>
<td>Lemmenjoki National Park</td>
</tr>
<tr>
<td>21. The Ravadasköngäs waterfall</td>
<td>Lemmenjoki National Park</td>
</tr>
<tr>
<td>22. A cascade at the mouth of Morgam-Viibus stream</td>
<td>Lemmenjoki National Park</td>
</tr>
<tr>
<td>23. Talus deposit on the shore of Morgamjärvi lake</td>
<td>Lemmenjoki National Park</td>
</tr>
<tr>
<td>24. Lateral drainage channels on the top of the Jäkäläpää fell</td>
<td>Lemmenjoki National Park</td>
</tr>
</tbody>
</table>

### Gold History Sites

<table>
<thead>
<tr>
<th>Gold History Sites</th>
<th>Protected Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>25. Gold Prospectors’ Huts at the Mouth of Kyläjoki</td>
<td>Hammastunturi Wilderness Area</td>
</tr>
<tr>
<td>26. Ruikanmutka</td>
<td>Hammastunturi Wilderness Area</td>
</tr>
<tr>
<td>27. The Lappi Farm at the Mouth of the Appisjoki (the Grounds of Annan Kaapi)</td>
<td>Hammastunturi Wilderness Area</td>
</tr>
<tr>
<td>28. Kultala Crown Station</td>
<td>Hammastunturi Wilderness Area, a nationally important cultural historical environment, also other protection statuses for the separate buildings in the area</td>
</tr>
<tr>
<td>29. The River Bank of the Sotajoki Confluence</td>
<td>Hammastunturi Wilderness Area</td>
</tr>
<tr>
<td>30. The Liljeqvist Dredge and its Surroundings</td>
<td>Hammastunturi Wilderness Area</td>
</tr>
<tr>
<td>31. Ritakoski’s Kultala Gold Village</td>
<td>Hammastunturi Wilderness Area</td>
</tr>
<tr>
<td>32. The Ritakoski steam engine</td>
<td>Hammastunturi Wilderness Area</td>
</tr>
<tr>
<td>33. Palsinoja (Raahe cabin)</td>
<td>Hammastunturi Wilderness Area</td>
</tr>
<tr>
<td>34. Nulkamukka – the Birth Place of the Gold Rush</td>
<td>Hammastunturi Wilderness Area</td>
</tr>
<tr>
<td>35. Kultala (Gold Village) along Pahaoja Brook</td>
<td>Hammastunturi Wilderness Area</td>
</tr>
<tr>
<td>36. The Kerkelä mining village (Belongs to Laanilan kultareitti Trail)</td>
<td>-</td>
</tr>
<tr>
<td>37. The Laanila white quartz rock and shaft (Belongs to Laanilan kultareitti Trail)</td>
<td>-</td>
</tr>
</tbody>
</table>
38. The Kuivakuru panning facility (Belongs to Laanilan kultareitti Trail)  -  
39. General’s mine shaft (Belongs to Laanilan kultareitti Trail)  -  
40. Carl Gustaf mine shaft (Belongs to Laanilan kultareitti Trail)  -  
41. Prospector’s mine shaft  -  
42. The old cabin at Suomunruoktu  -  Urho Kekkonen National Park  
43. The memorial to Sauva-Aslak  -  Urho Kekkonen National Park  
44. Kultahamina – starting point of the trail  -  Lemmenjoki National Park  
45. The site where gold was first found  -  Lemmenjoki National Park  
46. Morgamoja Kultala  -  Lemmenjoki National Park  
47. Pihlajamäki (the old yard of gold prospector Heikki Pihlajamäki & the modern machine prospecting area)  -  Lemmenjoki National Park  
48. Karhu Korhonen’s Library  -  Lemmenjoki National Park  
49. Korhonen  -  Lemmenjoki National Park  

Other Sites

50. The Korkia-Maura Ice Cave  -  
51. Sallivaara Reindeer Round-Up Site  -  Lemmenjoki National Park, protected under the Government Decree on State-Owned Buildings, also other protection statuses for the separate buildings in the area  
52. War History Trail  -  Urho Kekkonen National Park  
53. Ruijanpolku Trail  -  Urho Kekkonen National Park (partly)  
54. The Grounds of Kaapin Jouni  -  Lemmenjoki National Park  
55. The Pitfalls at the Sotkajärvi Ridge Chain  -  Lemmenjoki National Park  
56. Pielapajärvi Wilderness Church  -  Protected under the Church Act  
57. Ukonsaari Island  -  
58. Geological Trail  -  Urho Kekkonen National Park
3. Data on the Management and Maintenance of these Sites

There are several protected areas in the Golden Geopark of Lapland. This chapter gives some basic information about the protected areas in general, and more specifically about the protected areas in the Geopark.

Protected Areas in Finland

Protected areas help conserve the unique features and diversity of Finnish nature. Nature is not conserved for the sole purpose of preserving natural features, but also to ensure the well-being of people and to preserve good living conditions. Many protected areas also have national landscapes and cultural heritage sites, which must be conserved.

Protected areas can be either on state-owned or privately-owned lands. They can be established by law, by statute or a decision by Finland's environmental administration. Most protected areas are situated on state land. State-owned protected areas are managed by Metsähallitus’ Natural Heritage Services.

Nature reserves, wilderness areas and hiking areas established on state-owned lands are the central parts of the protected area system in Finland. Almost all of these are included in the European Union’s network of Natura 2000 areas. Privately-owned protected lands further expand on the state-owned network of protected areas. The protected areas located in Finland are an important part of the international network of conservation areas.

Strict Nature Reserves

Strict nature reserves are established by law or by statute for the purpose of research. They are located on state-owned lands and are primarily reserved for the purposes of nature conservation and research. They are also used for teaching purposes, if these do not compromise nature conservation in the area.

Strict nature reserves are conserved in their natural state so that researchers would be able to compare these with other areas and determine how many of nature’s changes are natural instead of having been caused directly by man. For the most part, strict nature reserves are closed to the public. The conservation regulations in strict nature reserves are stricter than in national parks.

All nineteen strict nature reserves of Finland are managed by Metsähallitus. Entering strict nature reserves is usually forbidden unless you have written permit. Permits are only granted for research. It is possible to walk along marked trails in a few strict nature reserves.
National Parks

National parks are over-1,000-hectare protected areas, which are also natural sights open to everyone. Their primary purpose is to ensure the diversity of Finnish nature. National parks are established by law on state-owned lands. The natural features and landscape in national parks are typical of Finland, but they are also a nationally and internationally valuable part of our nature. They have within them national landscapes and other natural sights.

There are 37 national parks in Finland. The combined area of Finland’s national parks is 9,789 sq. km. All the national parks are managed by Metsähallitus.

National parks are used for outdoor recreation, while having rules and regulations to ensure that this does not hinder nature conservation. An easy way to start an excursion in a national park is to visit a visitor centre in the area. There are visitor centres in or near several of the national parks. Guides and exhibits at the centres provide useful tips on how to make the excursion as successful as possible.

Wilderness Areas

Wilderness areas are established in northernmost Lapland in accordance to the Wilderness Act. They are not protected areas proper but belong to Finland’s Natura 2000 network. The aims of wilderness areas are to conserve their rugged wild nature, to preserve Sámi culture and livelihoods, and to develop the diverse use of nature and its potential.

All 12 of Finland’s wilderness areas were established in 1991 and their combined area measures 14,903 sq.km. All the wilderness areas are managed by Metsähallitus.

Other Protected Areas: Mire Reserves

There are 171 mire reserves established for the conservation of mire nature. They are an important part of the government’s ratified mire conservation programme, which aims at preserving the richness of our mire nature. Most protected mires are mire complexes such as aapa bogs or raised bogs and the country’s best bird mires are in these protected areas.

Entering and walking in mire reserves is usually permitted as an Everyman’s Right. In some reserves there are areas in which hiking, berry and mushroom picking, hunting and fishing are restricted to ensure that birds can nest in peace. Usually trails and duckboards have only been built in those mire reserves which are easy to reach and are close to habitation. Trails and duckboards help visitors get a better view of the mire birds.
Protected Areas in the Proposed Geopark Area

Protected areas of the proposed Golden Geopark can be found in the following map. The protection status of each geosite can be found in the chapter “C. Geoconservation, 2. Current Status in Terms of Protection of Geological Sites within the Proposed Geopark”, as well as in the annexes.
**Sompio Strict Nature Reserve**

*Eastern Lapland Region*
*Sodankylä (www.sodankyla.fi)*
*Area: 179 sq.km. Established in 1956.*
*The area is managed by Metsähallitus.*

Nestling by the Urho Kekkonen National Park, the primary objective of the Sompio Strict Nature Reserve is to preserve forest, fell and mire nature for the future and for scientific research. The strict nature reserve has been named after the old Sámi village of Sompio. Reindeer husbandry is amongst the basic sources of livelihood in the area and it is an integral part of the reserve’s landscape. For hikers, it offers unique nature experiences.

The core of the strict nature reserve is formed by the chain of the Nattastunturit Fells, which have sharp peaks. Lake Sompiojärvi is located on the southern side of the broad fell area of the Urho Kekkonen National Park and the scenery on the northern side is dominated by the fell area. On the Sompio Strict Nature Reserve’s marked trails, you can take a rewarding day trip or you can make it part of a longer hike.

The Sompio Strict Nature Reserve is closely connected to the Urho Kekkonen National Park, so care and utilisation plans for the national park have also affected the placement of trails, a campfire site, lean-tos and other service structures in the reserve. According to the Sompio Strict Nature Reserve Rules and Regulations, roaming in the reserve is allowed in any season, but only along the trails marked on the terrain. Camping is only allowed on the shores of Lake Sompiojärvi.

**Urho Kekkonen National Park**

*Eastern Lapland Region*
*Municipalities:*
  - *Inari (www.inari.fi),*
  - *Sodankylä (www.sodankyla.fi),*
  - *Savukoski (www.savukoski.fi)*
*Area: 2,550 sq. km. Established in 1983.*
*The area is managed by Metsähallitus.*

Urho Kekkonen National Park is an inviting place for visitors to hike during all seasons. The sun-lit nights of spring and summer, bright changing colours of autumn and calming darkness of the Polar Nights (kaamos) help visitors gather their strength, while hiking and experiencing this forest wilderness, which is unique in Europe. The western side of the park has marked trails, which make it easy for even the inexperienced backpacker to move around. Alternatively it is possible to go on long and demanding hikes in the park’s wilderness zones. Sompio Strict Nature Reserve and Urho Kekkonen National Park have a mutual border. An old trail called Ruija Trail leads across the strict nature reserve.

Urho Kekkonen National Park is one of Finland’s largest protected areas. The huge expanse of the park covers magnificent fells, broad mires and backwoods. Reindeer husbandry, hunting and fishing have long traditions in the region. They have left their mark in the form of hole traps, reindeer fences, herders’ huts.
Lemmenjoki National Park
Northern Lapland Region
Municipalities of Inari (www.inari.fi) and Kittilä (www.kittila.fi, in Finnish)
Area: 2860 sq.km. Established in 1956 (extended twice).
The area is managed by Metsähallitus

Lemmenjoki National Park is a dream destination for someone who enjoys trekking. It is the largest National Park in Finland, and also one of the whole Europe’s most extensive uninhabited and roadless backwoods. In the basic zone of the National Park and in the gold area, there are marked trails, open wilderness huts and rental huts, and campfire places, to make hiking easier. A boat trip in the wilderness-like valley of Lemmenjoki River is an experience in itself. Lemmenjoki National Park borders on Övre Anarjokka National Park in Norway. In addition to nature conservation, the park is also important to wilderness trekking and reindeer herding.

In the landscape of the National Park, great rivers alternate with forest, fell and mire areas in between them. The northern location of the National Park can be seen in the large birch forests covering the highest hills and the edges of the bare felltops. The northern limit of the Spruce (Picea abies) forests runs in the southern part of the park. The reasonably permanent populations of the Brown Bear (Ursus arctos) and the Golden Eagle (Aquila chrysaetos) indicate the wilderness-like nature of the National Park. The Moose (Alces alces) population is abundant, considering the arctic conditions of the Northern Lapland.

Hammastunturi Wilderness Area
Northern Lapland Region
Municipalities of Inari (www.inari.fi), Kittilä (www.kittila.fi) and Sodankylä (www.sodankyla.fi)
The area is managed by Metsähallitus.

Hammastunturi Wilderness Area is located in the forest and fell area between Urho Kekkonen National Park and Lemmenjoki National Park. The core part of the area is the upland of Kehäpää, Hammastunturi and Appistunturi Fells, the highest tops of which rise up to 500 metres. The northern limit of spruce growth crosses the wilderness area, and the spruce forests of the southern part are replaced by pine forests in the north.

Hammastunturi Wilderness Area has had a colourful history in the last two centuries. Before the Inari - Pokka road was built, the areas of Hammastunturi Fell and River Lemmenjoki formed one of the largest roadless backwoods in Finland. In the past, the area has been used for reindeer herding, there has been a gold rush and, later, roads and villages have been built. During the gold rush, there were hundreds of people living in Kultala Village along River Ivalojoki. The number of gold diggers was equal to the number of actual inhabitants in Inari altogether.

Kettujoki, Sota-aapa and Nälkääapa Mire Reserves
In addition to the above mentioned protected areas, there are also three Mire Reserves: Kettujoki, Sota-aapa and Nälkääapa.
Everyman’s Right

People of all nationalities have the right to enjoy the Finnish countryside freely under the traditional Finnish legal concept known as everyman’s right. But together with these wide-ranging rights comes the responsibility to respect nature, other people, and property. Special regulations in national parks and many nature reserves additionally limit activities such as camping, hunting, the use of motor vehicles, and access to sensitive areas during the nesting season. Such restrictions are listed separately for each area.

Other Acts Concerning the Geopark area

Also the following acts are valid in the area of the Golden Geopark of Lapland.

The Antiquities Act

Antiquities are protected in Finland under the Antiquities Act (295/63). Under the act “fixed antiquities are protected as reminders of Finland’s past settlements and history. Without permission granted under this act it is prohibited to dig, cover, modify, damage, remove or physically interfere with antiquities”.

The Land Use and Building Act

Taking care of the cultural environment and architectural heritage is primarily based on town planning and building guidance i.e. the Land Use and Building Act. It is complemented by the Act on the Protection of Buildings and the Decree on the State-owned Buildings. The protection of cultural heritage provided by the Land Use and Building Act is based on the one hand on direct plan stipulations, and on the other hand on indirect means based on the steerage from mainly the community structure and its functions.

The Mining Act

The objective of the Mining Act is to promote mining and organise the use of areas required for it, and exploration, in a socially, economically, and ecologically sustainable manner. In order to fulfil the purpose of the Act, the securing of public and private interests is required, with particular attention to:

1) the preconditions for engaging in mining activity;

2) the legal status of landowners and private parties sustaining damage;

3) the impacts of activities on the environment and land use, and the economic use of natural resources.

Starting from July 2011, Tukes (The Finnish Safety and Chemicals Agency) has acted as the permit and control authority as laid down in the new Mining Act (621/2011). Tukes makes decisions about rights and permits according to the Mining Act and maintains a Register of Mines.
4. Listing and Description of Non-Geological Sites and How They Are Integrated into the Proposed Geopark

Gold History Sites

The gold historical sites are situated along the Ivalojoki river and its tributaries, and also in the Lemmenjoki region, with only a few exceptions, which are situated close to the Ivalojoki area along the E75. Gold prospecting traditionally was done close to the rivers, because the gold prospecting methods used in Finnish Lapland generally require running water for separating the gold. Gold was first discovered along the Ivalojoki river, and this is an area where gold prospecting has been going on even up to the present. Some of the gold regions can be reached by car, though often on forest roads in poor condition. Other methods of transportation must be used to reach some of the regions, including waterways or hiking part of the way. More information about each geosite can be found in the annexes.

25. Gold Prospectors' Huts at the Mouth of Kyläjoki
26. Ruikanmutka
27. The Lappi Farm at the Mouth of the Appisjoki (the Grounds of Annan Kaapi)
28. Kultala Crown Station
29. The River Bank of the Sotajoki Confluence
30. The Liljeqvist Dredge and its Surroundings
31. Ritakoski's Kultala Gold Village
32. The Ritakoski steam engine
33. Palsinoja (Raahet cabin)
34. Nulkkamukka – the Birth Place of the Gold Rush
35. Kultala (Gold Village) along Pahaoja Brook
36. The Kerkelä mining village (Belongs to Laanilan kultareitti Trail)
37. The Laanila white quartz rock and shaft (Belongs to Laanilan kultareitti Trail)
38. The Kuivakuru panning facility (Belongs to Laanilan kultareitti Trail)
39. General's mine shaft (Belongs to Laanilan kultareitti Trail)
40. Carl Gustaf mine shaft (Belongs to Laanilan kultareitti Trail)
41. Prospector's mine shaft
42. The old cabin at Suomunruoktu
43. The memorial to Sauva-Aslak
44. Kultahamina – starting point of the trail
45. The site where gold was first found
46. Morgamoja Kultala
47. Pihlajamäki (the old yard of gold prospector Heikki Pihlajamäki & the modern machine prospecting area)
48. Karhu Korhonen's Library
49. Korhonen
The Pedagogical Aspect and Educational Value of Tankavaara Gold Prospector Museum

Pedagogical activities as such have been a part of the museum’s activities right from the beginning, for 40 years in fact. In 2014, a new, more structured, pedagogical programme was made at the Gold Prospector Museum, and it is part of the museum policy now. Guided gold panning is suited for all age groups ranging from babies to senior citizens. Visitors can have a learning experience and they can also have any gold they might find. The museum offers the possibility to try gold panning all year round, outside in the summer and at inside pools during winter.

The guided tour of the Gold Prospector Museum is intended mainly for adult groups using as many languages as possible, but an adaptation of the guided tour is also offered for children and the young. During the tour, Finnish gold history is demonstrated, together with the gold history of a few chosen countries picked from the international section. If there is enough time, also the properties of gold are explained briefly, together with the history of how metals have been used.

Various school excursion packages have been prepared for schoolchildren, especially for those at primary school. The most popular one is the “Goldfield School”. The pupils dress up in old-fashioned clothes and they go to a 19th century school class. The pupils learn to use a counting frame, do arithmetic and use an ink pen, and also learn about the surrounding region and the gold discoveries at Ivalojoki, and also about the prospecting methods. Then they go through a short guided tour of the museum exhibitions. The tour naturally ends with gold panning!

The summer of 2012 was the first when the “Gold Adventure” package for schoolchildren was used. The package includes a short adventure-like tour of the museum area, gold panning, and it ends with refreshments and Adventure Diplomas for everyone. The purpose of the Gold Adventure is also to give the parents a possibility to take the museum tour on their own while the children take part in their own programme. The package was well received and so it was also offered in the summer of 2014. It will be standard practice each summer from now on.

The Gold Prospector Museum is a gate to the gold country of Lapland. The museum cooperates with the gold tourism firms of Ivalojoki and Lemmenjoki. Those wishing to try gold panning for an extended period are first guided to nearby sites: The Tankavaara Gold Village or the Lauttaoja claim at Tankavaara, where customers can pay to learn gold digging for an entire day and up to even a whole month. Those interested in other gold prospecting areas, the prospecting methods, or of gold prospecting as a hobby are directed to contact the Gold Prospectors Association of Finnish Lapland. The museum for its part takes part in the annual Gold Panning Finnish Championship Games at Tankavaara.

The strict discipline of the Gold Field’s School reminds the pupils of the camp school how different it was to go to school at the end of the 1800s.
Preservation of gold history

The Gold Prospector Museum is a specialised museum, the basic mission of which is to preserve the past and present cultural heritage of gold prospecting. The concrete task of the museum is to collect, preserve and protect material and intellectual property connected with gold prospecting. The museum is situated in the northern part of Sodankylä, at Tankavaara, which is the southernmost of the gold prospecting areas in Lapland.

The Gold Prospector Museum also is involved in services and education aimed at the general public. This is done by way of studying the gathered and preserved cultural property, and by publicising it in exhibitions and publications. The museum produces cultural services, which bring stimuli and experiences to the visitors. The goal is to guide people into having a positive attitude towards taking care of the cultural heritage, and to make them see the effects of the past and present on our surroundings and culture.

Collections

The Gold Prospector Museum is the only one in Finland with the responsibility of preserving the history of gold panning. The collection work is methodical, active, and is based on the internal division of work within museums. The methodical work is made more effective by using a program for collection policies. The gathering of objects done by the Gold Prospector Museum is concentrated on the culture and history of gold prospecting, and also on the adherent surroundings, as well as on gold as a phenomenon. The museum mainly gathers objects and material connected with gold prospecting in Finland. The collections from other countries are mainly used for comparison in order to deepen knowledge and to widen the perspective.

The period of the gold companies at the beginning of the 1900s and in the 1920s left many interesting documents. Some of them can be found in the archives of the Gold Prospector Museum.
The collections are listed and maintained, and they are presented to the public in the form of the basic exhibition, as well as in various changing exhibitions. The Gold Prospector Museum has collections of concrete objects and photographs, archive collections, and stone and mineral collections. There are also some audio recordings and films. Furthermore, the museum has its own reference library of c. 6000 volumes with books on gold from Finland and around the world. Some of the international publications are unique in Finland. The library is a reference library and the volumes are not lent outside, but they can be studied at the library, and if needed copies from them can be produced for a fee, e.g. for research purposes.

Most of the collections of the museum are already included in the new information system, and part of the collection is freely available at the arjenhistoria.fi -website. From the web pages it is possible to order, for example, photographs for private or commercial use. This is done according to the museum’s price list for services.

Inside exhibitions, the outdoor museum area, and exhibitions online

The Gold Prospector Museum has a basic exhibition, which was renewed in 2011. It displays the gold history of Lapland with photos, texts, objects and films. Some of the objects are meant to be touched. Furthermore, the basic exhibition offers touch screens where visitors can test their knowledge about the properties of gold, among other things. The international Golden World -exhibition displays gold history from more than 20 countries. There is also a separate building with c. 2000 stone and mineral samples from Finland and various corners of the world. The display presents Lapland rock gold with the help of borehole samples and other exhibits. The changing exhibitions of the museum for their part are directly or indirectly connected with gold, gold history and gold prospecting.

The Gold Prospector Museum also has exhibitions online. “Sauva-Aslakan kulta” tells about how gold was found in Tankavaara and what happened then. “Etelän miehet elinkautisina” for its part tells especially about the background of and stories about the Lemmenjoki river gold legends.

Renovation work, inventorying and research on location

Every year the Gold Prospector Museum arranges a voluntary work camp lasting for about one week. This is done in cooperation with the Metsähallitus in order to recondition old gold prospecting sites. During the last few years the camps were held at Ivalojoki river and along its tributaries. Preliminary talks about a voluntary work camp at Lemmenjoki have been held.

The Gold Prospector Museum has performed research inventorying at Ivalojoki already from 1977 and at Lemmenjoki from 1978. The extensive inventorying material is preserved in the museum archives and most of the material is also possessed by the Finnish National Board of Antiquities. The research has been performed in cooperation with the University of Oulu, the Finnish National Board of Antiquities and the Metsähallitus. At present, research inventorying is still done in connection with the voluntary work camps.
Other sites

The other sites chosen are nature and culture sites. They are important as tourist attractions, while they are not necessarily directly connected with geology or gold history. These include, among others, important sites connected with the Sámi culture, as well as three theme trails for hikers, and unique nature sites. More information about them can be found in the annexes.

50. The Korkia-Maura Ice Cave
51. Sallivaara Reindeer Round-Up Site
52. War History Trail
53. Ruijanpolku Trail
54. The Grounds of Kaapin Jouni
55. The Pitfalls at the Sotkajärvi Ridge Chain
56. Pielpajärvi Wilderness Church
57. Ukonsaari Island
58. Geologival Trail

Information centers

Here are listed the existing information centers in the Geopark area. More information about them can be found in the annexes.

59. Tankavaara Gold Prospector Museum
60. Koilliskaira Visitor Centre
61. Kiilopää Fell Center
62. Kiehinen Customer Service
63. Metsähallitus Ivalo Customer Service and Inari municipality´s tourist information
64. SIIDA – Sámi museum and Northern Lapland Nature Center and Inari municipality´s tourist information
65. Lemmenjoki Nature Information Hut
66. Vuotso Sámi village

The wild rosemary is a typical mire plant.
D. ECONOMIC ACTIVITY & BUSINESS PLAN

1. Economic Activity in the Proposed Geopark

2. Existing and Planned Facilities for the Proposed Geopark

3. Analysis of Geotourism Potential of the Proposed Geopark
   - Cooperation with Partnership Companies
   - Metsähallitus (Natural Heritage Services)
   - Geological Survey of Finland
   - Inari-Saariselkä Tourism Ltd
   - Gold Prospector Museum
   - Gold Panning Competitions
   - Gold Prospectors Association of Finnish Lapland
   - Sámi Museum and Northern Lapland Nature Center Siida
   - The Indigenous Sámi People

4. Overview and Policies for the Sustainable Development

5. Policies for, and Examples of, Community Empowerment (involvement and consultation) in the proposed Geopark

6. Policies for, and Examples of, Public and Stakeholder Awareness in the Proposed Geopark
D. ECONOMIC ACTIVITY & BUSINESS PLAN

1. Economic Activity in the Proposed Geopark

The Golden Geopark of Lapland is situated in the Sámi Homeland area and also the Inari-Saariselkä tourism development zone. The basic objectives of economic development planning in the area have been to become the leading destination for Arctic nature and culture tourism in Europe, to strengthen the car, tyre and component testing sector, and to utilise and further process the natural resources of the region. This means there are both traditional Sámi livelihoods and other livelihoods in the area, including excellent tourism infrastructure, surrounded by large protected areas.

All this has impact on the economics of the Geopark, too. The main benefit is the tourism network and its services. The Inari-Saariselkä area is internationally well-known in tourism, has good traffic connections and a good road network (based around main road No 4 / E75), connections to northern Norway and northeast Russia, diverse northern nature and a multicultural population. Tourism companies are going to be the most important business co-operation partners of the Geopark, developing common products and product families.

Already today, the influence of tourism is significant. The total turnover of tourism on the area is about €76m (2011), 41% of all business activity. In 2013, there were 294,000 registered overnight stays in Saariselkä alone, which is a 10.0% increase on the year before (domestic +3.0%, foreign +20.3%). In the larger area of Northern Lapland (Inari & Sodankylä & Utsjoki), there were 494,500 overnight stays (+10.2%). Border crossings from Russia increased 36% in 2012, and the amount of passengers at Ivalo airport grew by 16%. The Geopark would be an extra accelerator to this positive development, especially at the edges of the area, where more customers and interesting attractions are needed. At the moment, the beautiful national parks, geological heritage and gold history are neither known nor used widely enough.

The economic activity in the Geopark would mostly be co-operation with the companies operating in the area. The administration of the Geopark is the responsibility of the municipalities of Inari and Sodankylä. The plan is to set aside 103,000 euros a year for basic administration for the first four years. Most services in the park are going to be provided by private enterprises, adding their income.
The following table describes the budget of the Golden Geopark of Lapland.

<table>
<thead>
<tr>
<th>Year</th>
<th>05-12/2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXPENCES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salaries</td>
<td>28 800</td>
<td>43 200</td>
<td>43 200</td>
<td>43 200</td>
<td>43 200</td>
</tr>
<tr>
<td>Salaries, side costs (30%)</td>
<td>8 640</td>
<td>12 960</td>
<td>12 960</td>
<td>12 960</td>
<td>12 960</td>
</tr>
<tr>
<td>Overhead costs</td>
<td>2 667</td>
<td>4 000</td>
<td>4 000</td>
<td>4 000</td>
<td>4 000</td>
</tr>
<tr>
<td>Rent</td>
<td>3 227</td>
<td>4 840</td>
<td>4 840</td>
<td>4 840</td>
<td>4 840</td>
</tr>
<tr>
<td>Travel costs</td>
<td>12 000</td>
<td>18 000</td>
<td>18 000</td>
<td>18 000</td>
<td>18 000</td>
</tr>
<tr>
<td>Outsources services</td>
<td>13 333</td>
<td>20 000</td>
<td>20 000</td>
<td>20 000</td>
<td>20 000</td>
</tr>
<tr>
<td><strong>Altogether:</strong></td>
<td><strong>68 667</strong></td>
<td><strong>103 000</strong></td>
<td><strong>103 000</strong></td>
<td><strong>103 000</strong></td>
<td><strong>103 000</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FUNDING</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Inari municipality (58,26%)</td>
<td>40 000</td>
<td>60 000</td>
<td>60 000</td>
<td>60 000</td>
<td>60 000</td>
</tr>
<tr>
<td>Sodankylä municipality (38,83%)</td>
<td>26 666</td>
<td>40 000</td>
<td>40 000</td>
<td>40 000</td>
<td>40 000</td>
</tr>
<tr>
<td>Metsähallitus (2,91%)</td>
<td>2 001</td>
<td>3 000</td>
<td>3 000</td>
<td>3 000</td>
<td>3 000</td>
</tr>
<tr>
<td><strong>Altogether (100%):</strong></td>
<td><strong>68 667</strong></td>
<td><strong>103 000</strong></td>
<td><strong>103 000</strong></td>
<td><strong>103 000</strong></td>
<td><strong>103 000</strong></td>
</tr>
</tbody>
</table>

Funding until 04/2015 according to the plan of the current project.
The annual fee of the partner network 150 € / year (will be used for developing the Geopark).
Possible extra revenue from Geopark products during the planned period.

The idea is to recruit and activate business networks to offer the services in the geopark. Recruited companies are allowed to use the marketing tools, e.g. the logo of the Geopark, and they can have common products and packages. The great advantage is that almost all the needed services already exist in the area: good traffic connections including Ivalo Airport, accommodation, programmes and other services, culture and attractions, places to visit.

2. Existing and Planned Facilities for the Proposed Geopark

Traditional Sámi livelihoods include reindeer herding, fishing, hunting, small-scale agriculture, gathering nature’s bounty and making handicrafts. Today, a common way to make a living is to combine these traditional livelihoods with tourism and other services.

Besides the traditional livelihoods, there are three main lines guiding economic development on the area including the Geopark: tourism, cold climate testing, and natural resources. Tourism is the biggest employer in the area after public services from the state and municipalities. Construction and primary production play smaller roles, but are still significant employers. Car and component testing is developing rapidly due to the recent investments made in the area. South of the Geopark area, the mining industry is developing in the municipality of Sodankylä. Mining does not reach the Geopark area, but there are going to be more potential visitors to the area.

There is a long history of travel, tourism and international connections in the area. The Ruija trail from Inari to northern Norway has been used since the 16th century; people were visiting market places, trading and they also went to Norway to fish. The gold rush started in 1870, bringing lots of different kinds of people and also the need for new services to the area. The road network started to develop when Petsamo was part of Finland, and the route there passed through the area. Actual tourism in Saariselkä started in the 1950s and a scheduled flight connection to Ivalo airport began in 1955. Tourism infrastructure development started in the 1960s, the first ski slopes were built in the 70s and very strong development happened in the 80s. From the year 2000 onwards, a new, active era for investment and development has arisen at the resort.

Now, in the Geopark area, Saariselkä is the main tourist destination, Ivalo is the administrative centre and Inari is the centre of Sámi culture and the base for lake tourism. The facilities the Geopark is able to make use of are e.g. a total of 13,500 beds, of which 8,250 are beds in private use, 5,250 beds in commercial use, 2,538 beds in eight hotels, and 2,712 beds in apartments and cabins. In addition to this, there are two hotels and campsites in Ivalo (about 500 beds), two hotels and holiday villages in Inari (about 350 beds), and lots of smaller accommodation companies in smaller villages around them. Some of them are cosy, small family companies;
some of them high-class international hotels; some even exotic glass igloos to see the magical Northern Lights. There are also wilderness cabins along the wilderness routes for experienced hikers willing to stay overnight in modest conditions.

There are over 10,000 customer seats in about 40 restaurants in the area, some of them night restaurants. There are also more than ten catering companies to provide services for cabins and festivities. Grocery stores with good selections are also available for people who need a packed lunch or want to cook their own food in the cabin. There are also other shops available, like souvenir shops, special shops for hiking and sports equipment and so forth. The Geopark can be interesting for meeting and conference guests, too: there are conference halls, auditoriums and facilities for up to 350 guests in the area. Meetings and events are also a good forum to spread information about geoparks and geological heritage.

There is a wide range of activities and programme services in the Geopark area. In winter, you can go skiing (cross-country or downhill), snowmobiling, husky driving, on reindeer sleigh rides, snowshoe safaris, winter fishing, toboggan runs, curling, ice stock sport, snow kiting, go-karts on ice and snow tracks, winter driving school, rally driving, or to meet Santa Claus himself at Santa’s Resort. In summer, there is the possibility to go e.g. hiking, Nordic walking, mountain biking, horse excursions, canoeing, gold panning, fishing or river rafting. There are hiking routes and possibilities for both daytrips and longer, more demanding wilderness trips. The Golden Geopark of Lapland is going to provide new trails and points of interest in the wilderness and thus increase the number of enthusiasts in the locations.

One of the traditional livelihoods in the Geopark area is gold prospecting. The history of gold prospecting started in the 1868 when the first gold nuggets were found in the Ivalojoki river. The discovery led to a great gold rush, and today modern gold placer mining is carried out in the Ivalojoki and Lemmenjoki river valleys. Gold digging is a profession to a few people, and a hobby to many. There are about 20 professional and about 100 semi-professional gold prospectors in Lapland, and for a couple of thousand people gold digging (or panning) is a hobby.

Gold prospecting can only happen during the five summer months, when there is no snow or frost. That is why of some the people who make their living by prospecting for gold in summer have other occupations during winter.
3. Analysis of Geotourism Potential of the Proposed Geopark

The Geopark and its sites would be an enormously attractive addition to the content, raising the value and interest of the area. Targeted marketing combined with specific information creates great potential for the Golden Geopark of Lapland.

The informative and educational work will partly be done together with existing operators, the most important visiting attractions: the Gold Museum of Tankavaara and the Sámi Museum and Northern Lapland Nature Center Siida, which both present a long perspective of local history, culture and nature. Other operators, the Geological Survey of Finland, Metsähallitus, Gold Prospectors Association of Finnish Lapland, and Inari-Saariselkä Tourism Ltd, are also providers of content, material and resources for educational use. The proposed Golden Geopark will also cooperate closely with local partnership companies, as well as entrepreneur organisations.

Cooperation with Partnership Companies

The Golden Geopark of Lapland has already during its project phase started cooperation with some of the enterprises in the region. One of the central ideas of the Geopark is to support business life and tourism in the region, particularly tourism connected to geology, gold and nature. We will now introduce two examples of businesses with which we have already tested various forms of cooperation. These businesses will also be a part of the partnership network. There has been cooperation in the form of, for example, planning products and product packages and planning Geopark’s partnership network.

**Lapin Luontolomat Oy** is a programme service company operating at Saariselkä and its surroundings. Their product line is very well suited to the idea of the Geopark, because travelling in the wild, either with or without a guide, is the strong point of Luontolomat. In the summer the programme includes canoeing, rafting, hiking and trips with the special attraction of the firm, the jet turbine boat called “Johkafanas” which can even travel on water only a few centimetres deep. This means that moving on the Ivalo river is possible also during periods of shallow water. In winter, snowmobile trips and equipment renting are part of the programme. The firm Luontolomat specialises in various theme trips, such as the “Midnight canoe trip”.

**The Tankavaara Gold Village** is situated close to the Tankavaara Gold Prospector Museum and the Koilliskaira Visitor Centre. These two sites act as visitor centres for the Golden Geopark and this means that the Tankavaara area provides excellent service to those interested in geological sites, since the Gold Village has restaurant, lodging and programme services, including gold panning. At the nearby claims, visitors can also try for themselves what it is like to live like a gold prospector. You can also try gold panning in the wintertime at indoor gold panning pools. These are also found at the Gold Prospector Museum.
Metsähallitus (Natural Heritage Services)
Metsähallitus is a state enterprise that administers more than 12 million hectares of state-owned land and water areas. Metsähallitus has the challenging responsibility of managing and using these areas in a way that benefits Finnish society to the greatest extent possible.

Metsähallitus is a state-owned enterprise that runs business activities while also fulfilling many public administration duties. There are also duties in environmental education. Therefore it can – together with Geological Survey of Finland – provide content, material and resources for educational use in the Geopark. Both organisations have been, and still are, active partners and operators in the geopark process.

Geological Survey of Finland
The Geological Survey of Finland (GTK) is a European centre of excellence in assessment, research and sustainable use of Earth’s resources. Their mission is to produce and disseminate geological information for industry and society that promotes systematic and sustainable use of crustal resources and the national geological endowment.

GTK’s research programmes are geared to creating innovative technology and applications. They serve as Finland’s national geoscientific information centre and participate actively in international research and project work. GTK is an agency of Finland’s Ministry of Employment and the Economy.

Inari-Saariselkä Tourism Ltd
Inari-Saariselkä Tourism Ltd represents the Northern Lapland area and the Sámi Homeland, from Sodankylä up to Utsjoki. Along the way to Arctic Ocean and North Cape lies Saariselkä – the northernmost holiday resort in Europe. The office of Inari-Saariselkä Tourism Ltd is situated in Saariselkä, in the information and shopping centre Siula.

Inari-Saariselkä Tourism Ltd promotes the area as an international and domestic destination. Operating as a regional tourism company they provide the tourism information services in the area, produce the areal brochures and other informative products and update the WebPages www.saariselka.fi. The marketing operations of Inari-Saariselkä Matkailu Oy also include fairs, exhibitions and events, media work and PR.

Gold Prospector Museum
Tankavaara is home to the only international museum in the world displaying the past and present of gold panning and prospecting. The basic exhibition presents the history of gold prospecting in Lapland. The Golden World, the gold pan-shaped international section, presents over twenty countries from all over the world. The Gold Prospector Museum offers an extensive display covering the gold history of more than twenty countries. In its 40 years, the small, nut-shaped log cabin has grown into an internationally recognized science centre. The Gold Prospector Museum is financially supported by the government and is managed by the Goldmuseum Foundation.

Gold Panning Competitions
Gold panning competitions first started in the 1970s, in order to promote and maintain the skill and tradition of gold panning, which has traditionally been the last part in the process of prospecting for gold. In the beginning, the competitions were annual, and in recent years gold panning competitions take place almost every weekend during summer in several places in Lapland (and elsewhere in Finland). The competition measures the competitors’ ability to use the washing pan. Each entrant has a bucket full of sand, which also contains an equal number of tiny gold nuggets of approximately the same size. The sand in the buckets is not from the locality, so that it does not contain any gold. The jury mixes the gold particles in the sand buckets in advance. The competitors do not know the number of nuggets, which are exactly the same within one series, but can vary from one heat to another. The aim is to find the tiny gold chips hidden in the sand bucket as fast as possible using the washing pan. Every lost chip incurs a penalty of five minutes in the final time. Gold panning competitions are one of the tourist attractions in the Geopark area. Tourists can also try their hand at gold digging and panning in certain areas.

Gold Prospectors Association of Finnish Lapland
The Association represents professional and semi-professional gold prospectors, as well as those who have gold panning as a hobby. There are about 20 professional and about 100 semi-professional gold miners in
the association. Most of them use hydraulic excavators in conjunction with bar or trommel screens. The vast majority of the members (4000) are recreational prospectors, digging by shovel and sluice box.

Environmental aspects are fulfilled with biologically decomposing oils and recycled water in washing. Dredges are also used, especially by recreational prospectors at Ivalojoki and Sotajoki area. All of these are strictly regulated and controlled by the authorities. Water samples are frequently taken below the claim for making turbidity and other chemical quality analysis – all at the expense of the claim owner.

The annual outcome from placer mining is 25-40 kg gold. The professional miners are producing most of it with their hydraulic machines while the recreational prospectors are responsible for the few kilos of gold. Bigger nuggets are extremely rare – the record is still 395 grams from year 1935 although there about 20 nuggets over 50 grams from this millennium. Even 1 gram piece is something that doesn’t come to every prospector. Precious stones are found as a by-product, star sapphire and almandine garnet being the most common ones. Most of the nuggets find their way into jewelry together with Lappish gemstones. The price of Lappish gold and gold jewelry is quite high because of the expenses paid in the production process, as described earlier.

The traditional profession of prospecting and panning associated with modern equipment is vivid and living in the Finnish Lapland. This is absolutely unique in the whole Europe. Gold Prospectors Association of Finnish Lapland’s goal is to maintain and support this profession, and also add awareness of it among the public, both local people and visitors of the area. Gold prospecting is a tradition that in some cases runs in the family for several decades, some of the prospectors of the area follow their ancestors in choosing their profession.

Sámi Museum and Northern Lapland Nature Center Siida

The exhibitions of Siida deal with the history and culture of the Sámi and nature in northernmost Lapland. The high-quality permanent exhibitions are complemented by interesting changing exhibitions. The exhibition services of Siida are jointly provided by the Sámi Museum and Metsähallitus. Sámi culture and nature are intertwined, and, at Siida’s exhibitions, they are introduced to the public as one whole. The exhibitions provide a great amount of scientific information, but also visual experiences for the visitor. Beautiful photographs, genuine objects and a rich sound world make a visit to the exhibitions an experience that appeals to many senses.

The introductory exhibition presents the development of northern nature and culture as a timeline from the Ice Age to modern times, which is also interlaced with world history. The exhibition also introduces visitors to the indigenous peoples of the Arctic and the reindeer-herding peoples of Northern Eurasia, as well as the evolution of the Sámi languages. The objects of the introductory exhibition are connected with the archaeological history of the region.

In the main exhibition of Siida, the sections dealing with nature in Northern Lapland and Sámi culture are placed one within the other. The exhibition focuses on survival strategies in the extreme conditions of the north and the demands of the cycle of the seasons. The cultural section gives the visitor an idea of the elements that the ethnicity and the present identity of the Sámi are made of. The section on nature describes the cycle of seasons and the phenomena connected with it in Northern Lapland.

Teuvo and Tuula Katajamaa have great expectations concerning the Golden Geopark. “We expect the Geopark to attract more international nature tourists from abroad to the Ivalojoki river. We have a fine wilderness site here and we as local entrepreneurs could utilise it even more”, Teuvo and Tuula Katajamaa say. In the background, a rubber raft party is preparing for a trip on the Ivalojoki river.

Photo: Mari Rotko

Teuvo and Tuula Katajamaas have great expectations concerning the Golden Geopark. “We expect the Geopark to attract more international nature tourists from abroad to the Ivalojoki river. We have a fine wilderness site here and we as local entrepreneurs could utilise it even more”, Teuvo and Tuula Katajamaa say. In the background, a rubber raft party is preparing for a trip on the Ivalojoki river.

Photo: Mari Rotko

Teuvo and Tuula Katajamaas have great expectations concerning the Golden Geopark. “We expect the Geopark to attract more international nature tourists from abroad to the Ivalojoki river. We have a fine wilderness site here and we as local entrepreneurs could utilise it even more”, Teuvo and Tuula Katajamaa say. In the background, a rubber raft party is preparing for a trip on the Ivalojoki river.

Photo: Mari Rotko

In the summertime various festivals are arranged at the Tankavaara Gold Village. Pictured is the Taiga festival competition with the Lapland lasso -the suopunki. Reindeer herders use the suopunki for catching reindeer. During the festivals a market is also held where, for instance, local artisans sell their products.

Photo: Marko Lauronen
The Indigenous Sámi People

The Sámi are the only indigenous people of the European Union. Peoples in independent countries are regarded as indigenous if they are descended from the populations which inhabited the country, or a geographical region to which the country belongs, at the time of conquest or colonisation or the establishment of present state boundaries, and if they identify themselves as indigenous and retain, irrespective of their legal status, some or all of their own social, economic, cultural and political institutions (e.g. the Sámi Parliament).

The Sámi are descendants of the people who first inhabited the northern regions of Fennoscandia shortly after the end of the last ice age, approximately 10,000 years ago. Ethnically, the Sámi people formed when the Sámi language and Finnish became two distinct languages around 2000 BCE due to differences in livelihoods and culture.

The Sámi languages belong to the indigenous languages of Europe and are most closely related, within the Uralic language family, to the Baltic-Finnic languages (such as Finnish and Estonian). Sámi is spoken in Finland, Sweden, Norway and Russia. In Finland, there are speakers of three Sámi languages: Northern Sámi, Inari Sámi and Skolt Sámi.

The Sámi national dress is the most prominent of the national symbols of the Sámi. It carries the history of the Sámi people and is an important part of the national identity. The pieces of clothing included in the costume, as well as the way it is adorned, indicate which part of the Homeland the bearer comes from, and even reveal his or her clan and marital status. In Finland, there are five main versions of Sámi dress: the Teno, Inari, Enontekiö, Vuotso and Skolt Sámi.

Sámi art has its roots in traditional Sámi lifestyle and folklore. There is no “art for art’s sake”; beauty and practicality always go hand in hand. Sámi handicrafts – duodji – reflect the nomadic lifestyle, making prudent use of natural resources. The aesthetic has traditionally been subordinate to the practical. Duodji includes clothes, tools, hunting equipment and ornaments made by hand. The shapes, patterns and colours originate from ancient everyday objects, the manufacture of which used to be an essential skill for practically everyone. Traditional materials include horn, bone, wood, tin, leather and fabric. Genuine Sámi handicrafts carry the joint Nordic Sámi Duodji label.

The total Sámi population is estimated to be over 75,000, with the majority living in Norway. There are about 9,000 Sámi in Finland, 2,500 in the Geopark area. More than 60 % of the Sámi now live outside the Sámi Homeland, which brings new challenges for providing education, services and communication in the Sámi language.

Traditionally, all the parts of the reindeer were used. The nutukkaat, shoes made of reindeer skin, are still used in the winter.
A woman’s dress includes a shoal called the silikki which is kept on the shoulders. It is fastened with a clasp or clasps known as a risku.

The status of the Sámi was written into the constitution in 1995. They have, as an indigenous people, the right to maintain and develop their own language, culture and traditional livelihoods. There is also a law regarding the right to use the Sámi language when dealing with the authorities.

Since 1996, the Sámi have had constitutional self-government in the Sámi Homeland in the spheres of language and culture. This self-government is managed by the Sámi Parliament, which is elected by the Sámi. The Skolt Sámi also maintain their tradition of village administration, under the Skolt Act, within the area reserved for the Skolt Sámi in the Sámi Homeland. The Sámi Homeland is legally defined and covers the municipalities of Enontekiö, Inari and Utsjoki, as well as the Lappi reindeer-herding district in the municipality of Sodankylä.

The visual arts of the Sámi have come a long way from the times of ancient rock paintings thousands of years ago, when the Sámi picture of the world was small enough to be preserved on a piece of reindeer skin stretched over a shamanic drum. Today’s artists combine their roots with influences from the dominant populations and from Western institutions. Modern and traditional elements go hand in hand. Sámi music is best known for joik, or luohti, the traditional North Sámi form of song. Typical features include an original use of tones and unrecognisable words, richness of rhythm, improvisation, a cappella and a strong link to Sámi culture.

According to the old Sámi faith, there are gods and forces all around us in nature and in houses. In former times, making offerings to these forces was an everyday part of Sámi life. Gods, spirits and other beings were important in Sámi faith and mythology. The Sámi had an encompassing faith, which had no limit to the number of gods one could believe in. The noaidi acted as an intermediary between the people in his group (siida) and higher powers. Some of the noaidi went into a trance to communicate with the gods and spirits.

Ukko Island (Äijihsuálui) is the best-known sacred site of the Sámi in Finland. Ukko (Äijih, in Inari Sámi) means old man, grandfather or thunder. The Sámi have, like other northern indigenous peoples, worshipped natural powers, such as the sun, water, wind and thunder. The god of thunder, Ukko, was the most important male deity. Ukko was evidently still worshiped at the end of the 1800s by placing animal catches, mostly deer bones and antlers, in a sacrificial cave.

There are also many other sacred sites in the area of the Geopark, mostly special places formed by nature itself. There are sacred lakes, hills and stones. The sacred stones are called Seita or Sieidi in the Sámi language. Large human- or animal-like stones situated in special places, boulders, scarps, cliffs or special piles of stones have often been thought to be sacred and worshiped as Seita. Combination of geological and cultural heritage is unique and delicious.
Sámi people in their traditional costumes. Reindeer herding is a traditional livelihood of the Sámi people.
The Sámi Museum Siida is the national museum of the Finnish Sámi and a national special museum. The Sámi museum stores in its collections the spiritual and material culture of the Finnish Sámi, and displays these in its exhibitions and publications. The main goal of the Sámi Museum is to support the Sámi identity and their cultural self-esteem. The main premises of the Sámi Museum are at Siida in Inari.

The offices, collection administration, exhibition production, and other central activities of the Sámi Museum are all located at Siida. The Sámi Museum also runs the Skolt Sámi Heritage House In Sevettijärvi in the municipality of Inari. The Sámi Museum has sister museums, which document Sámi culture in other Nordic countries and in Russia. The Sámi Museum is also associated with the museum network of the indigenous peoples of the world.

The pedagogical services of the Sámi Museum include exhibitions, guided tours, workshops, and web- and background materials. In its units the museum arranges lectures, seminars, and music- and theatre performances, which support pedagogical activities, as well as other theme and culture events. Bigger events are arranged in cooperation with other players connected with Sámi culture. Such events include the indigenous peoples’ film festival Skábmagovat (the main organiser is Sámi Dáidaga Doarjja Searvi) and the music festival Ijahis Idja (the main organiser is Anára Sámi Searvi).

The museum-pedagogical programme of Siida is based on the Sámi principles of upbringing and on the narrative tradition. The narrative tradition has an important role in transmitting traditional knowledge from generation to generation. Knowledge and skills have also been transmitted by way of active demonstrating. The guidance and teaching products of the Sámi Museum are built on these principles.

The Culture Interpreter of the Sámi Museum can help to tailor a unique programme for a visit to the exhibitions. The Culture Interpreter designs the guidance products of Siida, develops them and is responsible for their execution. Besides the Cultural Interpreter, the day-to-day pedagogical work is the responsibility of the customer service personnel of the museum, together with the trained freelance guides of Siida.

The Sámi culture interests both the modern Sámi youth as well as others interested in culture. The task of the Sámi Museum is to provide correct information about the Sámi culture. Museum pedagogical services and guidance services are important channels for providing information. Northern Lapland is also an excellent site for school excursions. The pupils can become acquainted with Sámi culture and the nature of the north at the same time. The half-hour long school excursion programme includes a guided tour of the exhibition, together with a short lesson of the Sámi language. The Sámi Museum’s exhibition and information services together with web materials expand the picture of the versatility of the Sámi culture.

The school lesson materials of the Siida basic exhibitions are divided into entities according to theme. It is a good idea to get acquainted with the presentation and introduction part already before the visit. Five different themes - the seasons of the year, how organisms are adapted to the north, snow, the forest and reproduction, cover excellently the most important contents of the basic exhibitions of Siida. Conception maps are tools especially for the teacher, which can be used to, for example, create tasks for teamwork.
4. Overview and Policies for the Sustainable Development

The Geopark is mainly situated on state-owned land. Therefore, the sustainability instructions and orders are mainly those of Metsähallitus. Metsähallitus follows an environmental and quality system based on the ISO 14001 standard, by which it can chart and control the diverse environmental impacts that result from its operations. Since 1998, the system's environmental section has been certified by DNV Certification Oy/Ab. The quality system has not yet been certified.

The environmental system is a tool that allows Metsähallitus to implement its environmental policy in practice. Common environmental objectives are confirmed annually, on the basis of which the environmental targets for the operational and financial plans of the business units and subsidiaries of Metsähallitus are decided. According to the principle of continuous improvement, the functionality of the environmental system is monitored regularly with the help of internal and external audits and a system of feedback. The environmental goals for 2013 are biodiversity and the functionality of ecosystem services.

Both social and environmental sustainability are essential when establishing the Geopark.

5. Policies for, and Examples of, Community Empowerment (involvement and consultation) in the Proposed Geopark

The Golden Geopark of Lapland is a common interest and all the operators are committed and willing to contribute to the project. Community empowerment and involvement was already taken into consideration when the planning projects were planned and started. In the steering group of the project are representatives (including political) from municipalities, the Gold Prospectors Association of Finnish Lapland, the Geological Survey of Finland and Metsähallitus, as well as an entrepreneur organisation. Both museums have participated as expert members. During the coming months, even more emphasis will be put to involving different local communities, including eg. entrepreneurs, schools and other communities. The aim is to commit them all to the development.

If any legal actions are required, they will happen through normal official channels and procedures.

6. Policies for, and Examples of, Public and Stakeholder Awareness in the Proposed Geopark

The municipalities and Metsähallitus play a crucial role in maintaining the Geopark. Metsähallitus governs the state land areas and the national parks. Besides that, they all take part in funding the geopark. To begin with, there will be one all-year-round employee working in the Geopark in addition to the administrative employees in the municipalities and Metsähallitus. Metsähallitus has an excellent nationwide customer service chain including tourist information desks in co-operation with the municipality of Inari. The Geopark can join this existing co-operation instead of having to create additional bureaucratic systems.

There will be an agreement between the municipalities and Metsähallitus about funding and details. The organisational plan is presented in this application. With all the partners, Geopark signs a contract stating the rights and duties included. Every partner takes their own share of marketing and communicating with surrounding community.

The Golden Geopark of Lapland has during its project phase maintained a facebook page, publishes a newsletter once a month, and also gained publicity in local newspapers.

E. INTERESTS AND ARGUMENTS
FOR JOINING THE EGN / GGN
In Northern Lapland, tourism is an important source of livelihood, and naturally it has to accommodate the special characteristics of the area and be able to utilise and benefit from them. They should be used to attract and lure visitors.

The proposed Golden Geopark of Lapland is located in an area where traditional livelihoods co-exist with modern tourism business, and other modern livelihoods. At best, they not only co-exist, they cooperate. A common way to make a living today is to combine traditional livelihoods with tourism and other services, and this direction is what the Geopark will focus on supporting.

Geopark status would bring to the area more possibilities to continue developing local businesses, combined with the traditional livelihoods and way of living. Although there is a long history of tourism in the area, there is still a lot of unused potential, especially in summer tourism, and developing geotourism is a strategy that a large network of possible future partners and local authorities strongly support. Being part of the European and Global Geopark Network would help to create the foundations for that development.

What would the Golden Geopark of Lapland bring to the Geopark Network? This Geopark would be unique in many ways: the location about 250 km above the Arctic Circle, the arctic and subarctic climate, several natural attractions, interesting geology, the homeland of the indigenous Sámi people and, as well as the attractive gold history of the area. The Golden Geopark of Lapland would add value to the already rich and diverse offering of the Network, by bringing it a unique and a totally new kind of member.

According to the report from the advisory visit by Richard Watson as a representative of EGN in June 2011, the region has the potential to become a Geopark due to its internationally and nationally important geology, geomorphology, natural history and cultural heritage, as well as the high quality of the existing tourism infrastructure. The report also states that there appears to be support for the concept of the Geopark from local authorities, museums and Metsähallitus, who have actively contributed and participated in the development of the Geopark in their previous activities, as well as during the application phase.
The region is geologically important, and it has unquestionable scientific value, as well as importance for a wider audience. It has a long geological history, from Precambrian bedrock over two billion years old up to Quaternary deposits less than 10,000 years old. It features many geologically representative sights of interest to visitors. These are tor formations, eskers, deltas, melt water channels, potholes, moraine hummocks etc. The region is famous for its placer gold deposits. Prospecting for placer gold along river banks has been going on for over 140 years. Gold-related stories, structures and monuments add to the allure of the area. They include old mining villages and claims, gold huts in a state of collapse and mine shafts excavated into the rock.

Establishing a Geopark in Northern Lapland is a remarkable endeavour, and the Golden Geopark of Lapland will create a connection between the scientific world and the wider audience visiting Lapland. It would represent an impressive combination of a unique untouched and varied wilderness area, geological natural monuments, gold prospecting history and modern-day outdoor recreation for the traveler.

The Golden Geopark of Lapland is ready and willing to join the European Geopark Network, and to start working as an active member of it. We are looking forward to cooperation and networking with other Geoparks in Europe and around the world.

Local entrepreneurs have great expectations concerning the Golden Geopark of Lapland. The Ivalojoki river and the large wilderness area around it offer great opportunities for outdoor recreation.
ANNEXES

1. SUPPORT LETTERS
2. SELF-EVALUATION DOCUMENT
3. SELF-EVALUATION DOCUMENT CLARIFICATIONS
4. GEOSITES
   All Geosites
   Geological Sites
   Gold History Sites
   Other Sites
   Information Centers
   Geosites and Protected Areas
5. GOLD HISTORY OF LAPLAND
6. GEOKULMA PROJECT AND RICHARD WATSON’S REPORT
7. GEOLOGICAL MAPS
8. NEWS LETTER

Picture in the back cover: Northern Lights. Photo: Pertti Turunen
Golden Geopark of Lapland