

KALLAK

A real asset, and a real opportunity
to transform Jokkmokk

A presentation by Copenhagen Economics prepared for Beowulf Mining plc
7 September 2017

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An invitation to potential partners who have a stake in Kallak

KALLAK'S POTENTIAL

Various, independent estimates all indicate real and significant potential for Kallak to create new jobs and generate substantial tax revenues. Currently, Jokkmokk needs more investment, new enterprises and jobs. This is causing people to leave, looking elsewhere for opportunities, resulting in a declining population.

Mining the Kallak North deposit has the potential to provide around 250 direct jobs and SEK 600m in additional tax revenues to the municipality of Jokkmokk over 14 years.

If the mine life is extended with the Kallak South deposit, then SEK 1b in additional tax revenues could be generated over 25 years.

Past experience suggests that a well-engineered plan is essential, so that the local community reaps the benefits of Kallak's potential. Beowulf believes that the case of Kallak and Jokkmokk is no different: the full potential benefits are likely *not* to materialise on their own, but through partnership and collaboration.

UNLOCKING KALLAK'S POTENTIAL

That is why Beowulf invites the municipality, commercial partners, regional government, relevant authorities and regulators, landowners, members of the Jokkmokk and Saami communities, and other interested partners, who share an interest in Kallak, to partner and collaborate, to develop and work together towards common goals: establishing the foundations for Kallak's success, and the realisation of a thriving, diversified and sustainable economy for Jokkmokk, with benefits spilling over to Norrbotten and the country.

Kallak can create opportunities, skilled jobs, reduce youth unemployment, harness Swedish innovation in the design and engineering of the project, adopting Sweden's fossil free goal, and revitalise Jokkmokk.

Unlocking Kallak's full potential, means that everyone with a stake in the project, needs to get involved, contribute, so that synergies between partners can be maximised. We can then get more out of the project.

As steward of the asset, Beowulf is committed to facilitate the processes necessary to articulate the goals for each partner, and to drive the partnerships towards achieving the goals.

This is Beowulf's invitation for all partners to come together, to unlock Kallak's potential.

BEOWULF'S PHILOSOPHY

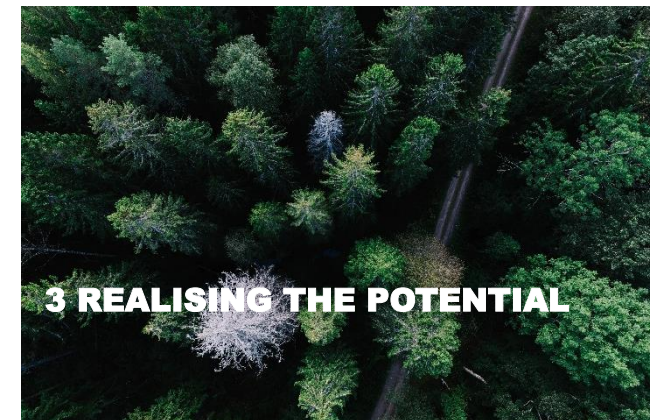
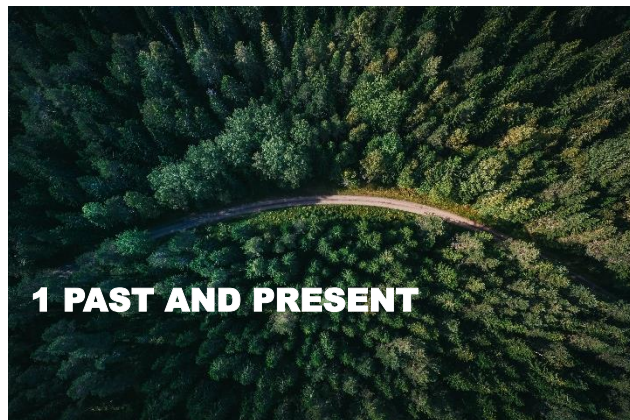
Beowulf's mission statements include becoming a local partner and delivering responsible development. Beowulf will facilitate the development of a modern and sustainable mining operation, but believes partners have a role to play in maximising social gains, and ensuring Jokkmokk and the region have a bright future. The role of Beowulf is only one part in the 'Big Picture' positive impact that Kallak will make.

The Company has already shown its commitment to the project, investing over SEK 72m, building trust locally, and nascent partnerships. The Company looks at the full life cycle of the mining project, with the goal being a thriving, diversified and sustainable economy for the people of Jokkmokk.

In this summary presentation, with the support of Copenhagen Economics, Beowulf has made the effort to outline concrete suggestions for partnerships, processes and the benefits of real collaboration: structured processes with transparent goals.

Kurt Budge, CEO of Beowulf Mining Plc.

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PAST AND PRESENT

An aerial photograph of a dense forest. A light-colored road or path curves through the middle of the image, separating the forest into two halves. The trees are mostly evergreens, with some deciduous trees showing yellow and orange foliage. The lighting is bright, creating strong shadows and highlights on the forest canopy.

Photo by [Geran de Klerk](#) on [Unsplash](#)

What is Kallak?

A REAL ASSET...

Kallak is a quality magnetite iron ore deposit located in Jokkmokk Municipality, Norrbotten, northern Sweden. The project is being developed by Jokkmokk Iron Mines AB ("JIMAB"), a 100% owned subsidiary of Beowulf Mining Plc, which is listed in both Stockholm and London, and is 57,4% owned by Swedish shareholders.

Kallak was discovered by the Geological Survey of Sweden (SGU) in 1947 and was in 2013 designated as an Area of National Interest ("ANI") due to its potential importance for the security of supply for Sweden.¹

In that sense, Kallak is deemed by the SGU as a strategic and valuable asset, worth protecting for its mining potential, alongside the producing mines of LKAB (Kiruna and Malmberget) to maintain Sweden's leading position as the single largest iron ore producer in Europe.

... AND A REAL OPPORTUNITY

JIMAB has applied for an exploitation concession to earn the mining rights for Kallak North, one of three known mineralised targets, which also include Kallak South and other Parkijaure licences. A mine at Kallak will make a positive economic impact on Jokkmokk, creating direct and indirect employment, providing the stimulus for new local and regional enterprises, and supporting Jokkmokk Municipality through tax revenues for a period of up to 25 years or more.

FACILITATED BY BEOWULF

To date, SEK 72m has been invested in Kallak, a significant commitment by JIMAB towards delivering a modern and sustainable mining operation, in partnership with the local community of Jokkmokk.

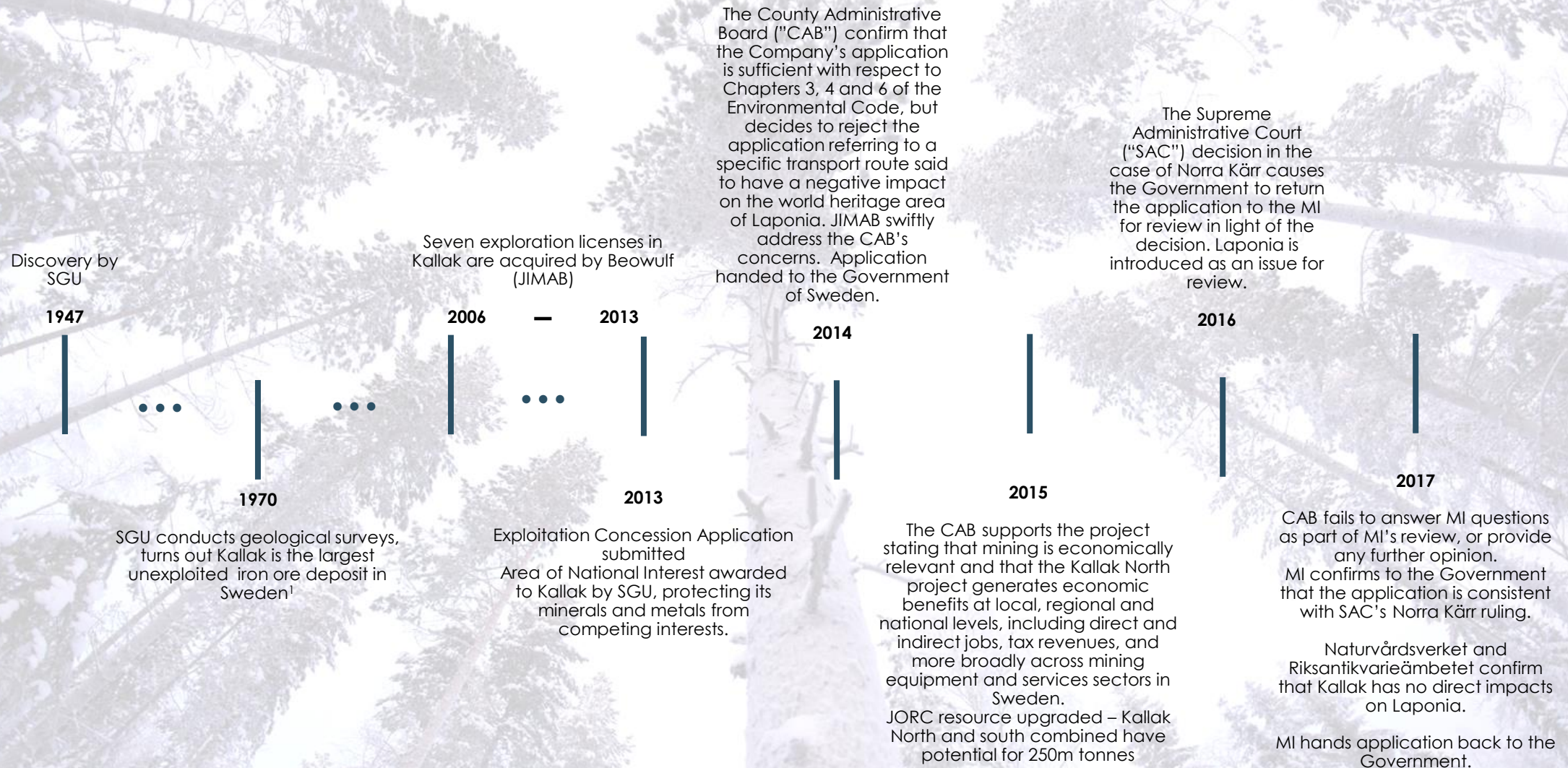
Kallak – a quality asset and an exciting opportunity for Jokkmokk



Photo: Courtesy of Beowulf Mining Plc.

Source: 1) SGU (2013): Beslut 2013-02-19 Utpekande och detaljavgrensning av riksintresset Kallak i Jokkmokks kommun, Norrbottens län, enligt 3 kap. 7 § andra stycket i miljöbalken.

Story of Kallak – SEK 72m invested, potential 250m tonnes iron ore



1) Bergsstaten (2015) Yttrande Dnr BS 22-559-2013

Jokkmokk today

A DECLINING POPULATION

Jokkmokk experience a declining and aging population. Compared to 2000, the number of inhabitants has decreased by 15%. About one fourth of the people moving from Jokkmokk are young people between 18-24 years of age.

Unless this trend is reversed, it will, over time, result in a decrease in the working-age population and fewer people to cover costs of welfare, benefits, schools, health care etc.

In 2015, the total work force of Jokkmokk amounted to 2 419 people, of which 427 commuted out of the municipality to work (and 267 commuted in).¹

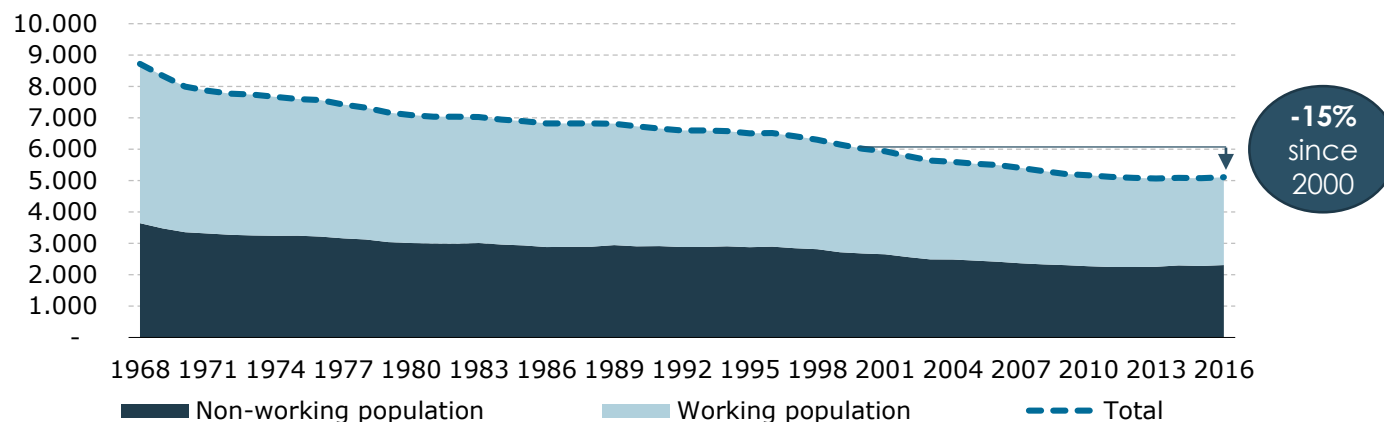
LACK OF LOCAL JOBS AND BUSINESS OPPORTUNITIES

The need to commute out of the municipality to find work may reflect a lack of job opportunities locally. Unemployment rates are higher in Jokkmokk than in Norrbotten generally, and in Sweden as a whole (March 2017). Especially, youth unemployment was high (12%) compared to the rest of Sweden (8%).²

Compared to the rest of Sweden, public sector employment is dominant in Jokkmokk (44% compared to 33%), with the biggest employers being the municipality of Jokkmokk, Vattenfall and Norrbotten County Council.³

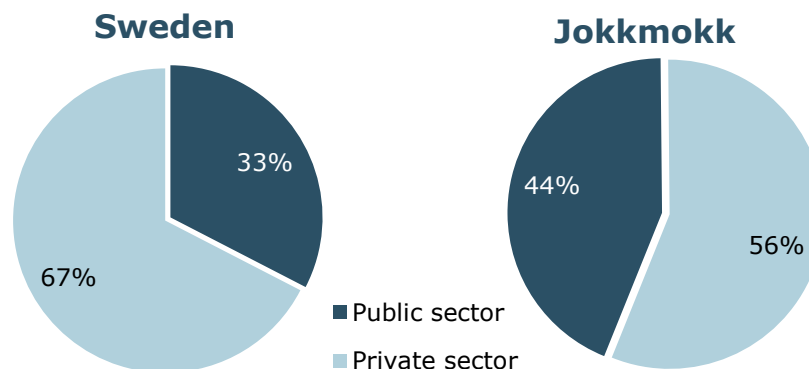
In 2015, inhabitants of Jokkmokk ranked job opportunities very low (35) compared to the average for municipalities in Sweden with fewer than 10 000 inhabitants (42).⁴

Negative population growth for many years



Source: Statistiska centralbyrån; Population Statistics

Business structure implies fewer than average work opportunities in private sector



” Det behövs fler gruvor i Norrbotten. Jag hoppas verkligen att det blir en gruva i Jokkmokk (...). Får man de här på plats så skapar det sysselsättning, industriell utveckling och skapar tjänsteföretag.
Sven-Erik Bucht, Landsbygdsminister
P4 Norrbotten 2014-01-21

” Lokal tillväxt och investeringsklimat går mot en ny istid. Fortsätter det kommer Jokkmokk frysa ihjäl.
Robert Bernhardsson Kommunstyrelsens ordförande (S), Jokkmokk
NSD Debatt 2017-04-07

Note: Share of private and public sector employment (16-64 year olds) in Jokkmokk municipality in 2015
Source: Statistics Sweden; The Swedish Occupational Register

Source: 1) Statistics Sweden 2017, 2) Jokkmokk Kommunfakta2017, 3) Statistics Sweden; Business register 2014, 4) Statistics Sweden; Medborgarundersökning hösten 2015. Statistics Sweden surveys citizen 'satisfaction' on a scale from 0-100. Ratings below 40 can be interpreted as "not satisfying". Ratings above 55 can be interpreted as "Satisfied", and ratings of 75 or higher can be interpreted as "very satisfying".

A clear role for the mining industry in future growth and development

” Bland annat är landsbygdernas natur- och kulturmiljöresurser **viktiga för att ta Sverige in i en biobaserad och fossilfri ekonomi** och för att göra Sverige till en utvecklad besöksnation.
SOU 2017:1

För Sveriges landsbygder –
en sammanhållen politik för
utveckling, hållbar tillväxt och välfärd

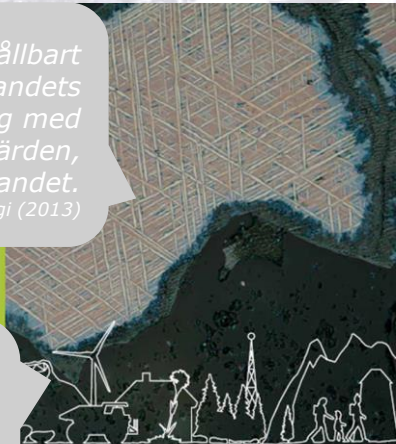
Slutbetänkande av
Parlamentariska landsbygdsutskottet

Stockholm 2017



” Genom ett långsiktigt hållbart användande av landets mineralresurser, i samklang med miljö-, natur- och kulturvärden, skapas tillväxt i hela landet.
Sveriges mineralstrategi (2013)

” Etableringar [kan] bidra till mer hållbar och diversifierad tillväxt lokalt och regionalt, som kan främja utvecklingen i andra sektorer och branscher
Sveriges mineralstrategi (2013)



Sveriges mineralstrategi

För ett hållbart nyttjande av Sveriges mineraltillgångar som skapar tillväxt i hela landet.

” Näringsens och regionernas kompetensförsörjning ska tryggas i ett nära samarbete mellan näringen och aktörer på lokal, regional och nationell nivå.
Sveriges mineralstrategi (2013)

REGIONAL STRATEGI FÖR

Innovativ och hållbar utveckling av mineralsektorn

I NORRBOTTENS OCH VÄSTERBOTTENS LÄN - 2025

” Vision 2025:
Norrbotten och Västerbotten har utvecklat och stärkt sin ledande ställning inom **innovativ och hållbar utveckling av mineralsektorn**, såväl nationellt som internationellt.
Regional Mineralstrategi för Norrbottens och Västerbottens län - 2025

” Med gruvnäringen som nav stimuleras **teknologisk utveckling och tekniskt lärande**.
Regional Mineralstrategi för Norrbottens och Västerbottens län - 2025



An aerial photograph of a dense forest, likely a coniferous forest, with a dirt road running horizontally across the middle. The trees are mostly green, with some bare, white branches visible in the upper left. The text "THE POTENTIAL" is overlaid in white, bold, sans-serif font on the left side of the image.

THE POTENTIAL

Photo by Gerard de Klerk on Unsplash

The Kallak base case

20+ YEARS OF BUSINESS ACTIVITY

Kallak North is a quality magnetite iron ore deposit with a 122,9m tonnes resource, indicated and inferred.

Beowulf is focused on developing a modern and sustainable mining operation, with concentrate production from Kallak North lasting for a minimum of 14 years.

The final product will be premium iron ore

concentrate, up to 71% iron content, with the Company's focus on European & Middle Eastern markets for pellet feed/Direct Reduction Iron ("DRI") facilities and chemical grade uses.

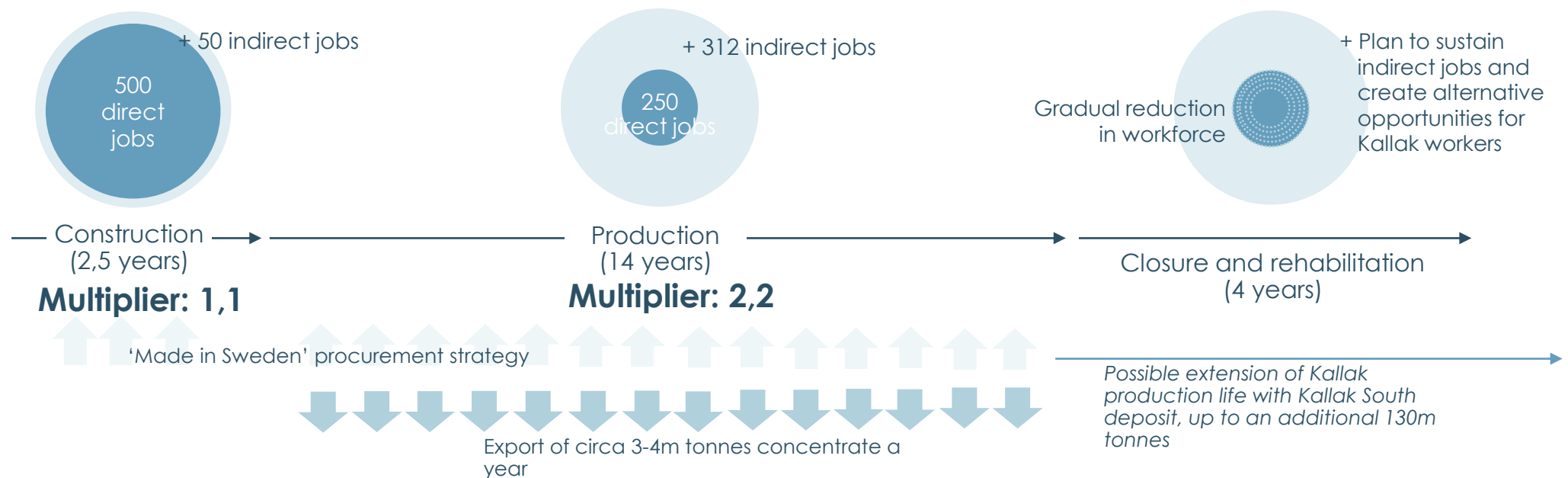
JOBS

The project requires a workforce of around 500 people in the 2,5 year long construction phase and around 250 people permanently during the 14 year production phase. Relative to the size of the labour market in Jokkmokk, 250 jobs is massive and

equivalent to a demand shock of more than 50 000 jobs in Stockholm.

Significantly, the production phase will support a large number of indirect jobs in Jokkmokk and the surrounding region through the purchase of goods and services locally. Researchers from LTU have estimated that for every job at the mine, another 1,2 jobs will be created in Jokkmokk municipality.

The Kallak project (north deposit) – Job creation in Jokkmokk



Note: Indirect (and direct) jobs reported are for Jokkmokk. Indirect jobs in Norrbotten are estimated by LTU to be even higher. Here we only report local effects in Jokkmokk to remain conservative. Source: LTU (2013) Samhällsekonomisk effektstudie av gruvprojektet Kallak, MKB (2014)

Transforming Jokkmokk – a thriving, diversified and sustainable economy

A SHIFT IN BUSINESS STRUCTURE

Kallak will become a major employer in Jokkmokk; about half the size of the municipality.¹

Kallak will bring almost as much employment to Jokkmokk every year as all of Jokkmokk's most typical workplaces (1-4 employees) together. Last year, only 3 new 'typically sized' employers established themselves in Jokkmokk.² All else equal, Kallak will move the business structure more towards the country average of 67% private

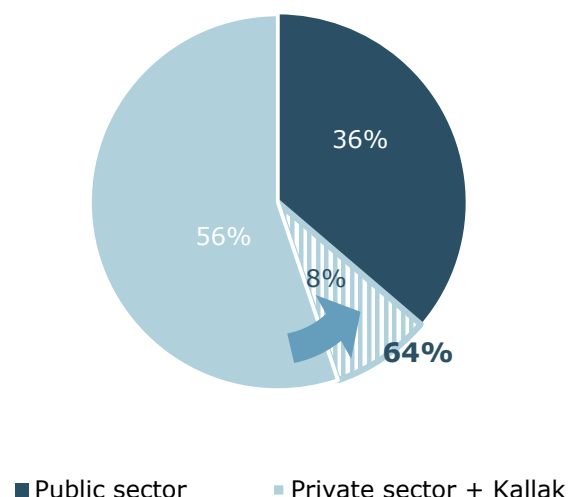
sector jobs. Expansion with local suppliers and businesses can add to this development even further.

MORE JOBS, MORE TAXES

Estimates of Kallak's tax contribution to the municipality of Jokkmokk range between SEK 19-63m a year, or SEK 266-882m over the 14 years of production, depending on the assumption on share of locals in the workforce.³

Looking further ahead and at the Kallak North and South deposits combined with a potential global resource of 250m tonnes, Kallak could support a production life of 25 years or more. Assuming yearly taxes of SEK 44m (the mid-point of the SEK 19-63m range), this could mean a total contribution from Kallak to Jokkmokk municipality of more than SEK 1b, and support the development of an economy that lives well beyond Kallak.

Towards a more diverse business structure



Note: Change in share of public and private employment in Jokkmokk with an 250 people increase in private sector employment, all else equal.

Source: Copenhagen Economics' calculations based on data from Statistics Sweden and LTU (2013) Samhällsekonomisk effektstudie av gruvprojektet Kallak

Tax contribution of Kallak

14 years of mining
at Kallak North



25 years of mining
at Kallak North,
South, and
Parkijaure

Note: Total tax contributions based on a 14 and 25 year production phase with a yearly tax contribution of SEK 44m. SEK 44m is the midpoint between Ramböll's low-scenario estimate of SEK 19m with a 30% local work force and LTU's estimate of SEK 63m with a 100% workforce. Contained in this interval is Ramböll's high-scenario with SEK 40m in taxes a year, corresponding to a 70% local work force.

Source: Ramböll (2015) Samhällsomvandling som följd av eventuell gruvetablering i Jokkmokk, LTU (2013) Samhällsekonomisk effektstudie av gruvprojektet Kallak

Source: 1) 250 jobs versus 575 in 2014 according to Statistics Sweden, Business Register 2) Copenhagen Economics' calculations based on data from Statistics Sweden 2017 and Regionfakta, Norrbotten, 2016. Self-employed are disregarded. 3) Ramböll (2015), LTU (2013).

An aerial photograph of a dense forest. The trees are mostly green, but there are several dead, white trees scattered throughout. A road or path is visible on the right side of the image. The text "REALISING THE POTENTIAL" is overlaid in the center.

REALISING THE POTENTIAL

Photo by Geran de Klerk on Unsplash

Realising the potential of Kallak

THE DEVELOPMENT PHILOSOPHY OF BEOWULF

Estimates from both Ramböll and LTU suggest a potential of 1-1,2 new indirect jobs in Jokkmokk for every direct job at Kallak (i.e. a multiplier of 2-2.2). When taking into account all jobs created nationally from a mine (including both direct, indirect and the so-called induced jobs), Svemin, the industry association of mines, mineral and metal producers in Sweden, estimates a multiplier of 4.¹

History, however, suggests that to maximise the local positive effects of direct investment, **a formal strategy** for sourcing from the local labour, goods and services, and for developing these further, needs to be formulated and initiated.

Beowulf does not believe that the current labour market and business community in Jokkmokk will be able to realise a multiplier in the 2.2 region, without a strategic plan and capacity building.

With an objective to realise the full potential of Kallak in Jokkmokk, Beowulf invites the community, the municipality, county, government and local businesses and business organisations to a structured cooperation with the aim of preparing the labour market, business life and (social) infrastructure for the big investment that Kallak is, while at the same time safeguarding other interests, such as tourism, and the interests of the Saami reindeer herders and their communities.

Beowulf has identified a number of activities that could help prepare Jokkmokk and maximise the likelihood of realising the full potential of Kallak. Similarly, Beowulf has identified a number of potential commercial partners where mutually beneficial strategic partnerships could be formed upon Beowulf receiving the exploitation concession.

Beowulf is committed to local development in close cooperation with other stakeholders and propose a number of concrete dialogue processes that will result in contractual commitments and follow-up over the course of the mining operation, ensuring that local economic potential is reaped (see next slides). Beowulf believes that such processes are currently absent in Sweden.

Source: 1) Svemin (2012) 'Gruvbranschen - en tillväxtmotor för Sverige'

Copenhagen
Economics

Collaboration

VATTENFALL

Mine electrification,
zero-diesel,
zero carbon

#Inlandsbanan

Supply chain
optimisation



- Job centres
- Business associations and incubators
- Local businesses and suppliers
- Regional banking/finance e.g. commercial banks, Norrlandsfonden



LULEÅ HAMN
PORT OF LULEÅ · SWEDEN

Supply chain
optimisation

LULEÅ
TEKNISKA
UNIVERSITET

Innovation,
education partner;
Technical, Environmental,
Political science,
Economics

- Government (local, regional, national)
- Social, Public Infrastructure & Services Planning (Trafikverket)

Source: Copenhagen Economics

Opportunities for partnerships and collaboration

LABOUR MARKET – TASK FORCE *LOCAL JOBS*



LOCAL SUPPLIERS AND SUBCONTRACTORS - TASK FORCE *'MADE IN SWEDEN'*



Opportunities for partnerships and collaboration

STRATEGIC, COMMERCIAL PARTNERSHIPS AND COLLABORATION

2017	+6-9 months	+9-12 months	+ 12 months
Mining concession granted	Beowulf initiate meetings with Vattenfall to discuss opportunities for collaboration Vattenfall and Beowulf identify areas in national and regional strategies where they can play a significant and mutually beneficial role	Beowulf and Vattenfall to further explore and develop mutually beneficial partnerships. Research other potential partners, sponsors etc.	Beowulf and Vattenfall define scope of collaboration and sign MoU.

Som ett nytt långsiktigt klimatmål ska Sverige **senast år 2045 inte ha några nettoutsläpp av växthusgaser till atmosfären.**

Press release from Swedish Government 15. June 2017

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SOU 2017:1



Opportunities for partnerships and collaboration

STRATEGIC, COMMERCIAL PARTNERSHIPS AND COLLABORATION

2017

+6-9 months

+9-12 months

+ 12 months

Mining concession granted

Beowulf initiate meetings with local suppliers of transport infrastructure to discuss opportunities for collaboration

Identify how Beowulf can support existing capacity expansion plans and become a strategic partner (yearly transportation need for 3-4m tonnes concentrate)

Identify project specific needs for Kallak project and examine how Inlandsbanan's and the port of Luleå can accommodate Beowulf to optimise joint benefits of partnership

Beowulf and Inlandsbanan/Port of Luleå define scope of collaboration and sign MoU.

Consider possible interface and synergies with regional and national development plans

” Utvecklingen av infrastruktur viktig för att både skapa fler jobb och nå målet om att bli ett av världens första fossilfria välfärdsländer.

Previous minister of infrastructure, Anna Johansson, 24 March 2017

” Regeringen uppdrog den 21 maj 2015 åt Trafikverket att ta fram ett **Inriktningsunderlag inför den långsiktiga infrastrukturplaneringen** för perioden 2018-2029.

Regeringsbeslutt, 2017-03-23

#Inlandsbanan

LULEÅ HAMN
PORT OF LULEÅ · SWEDEN

Next steps – Building momentum

Imminent - Commence
Scoping Study

Establish roadmap to
Pre-feasibility

Initiate dialogue with
potential partners

Initiate workshops for
Task Force *Local Jobs*
and *Made in Sweden*

2017

Resource drilling
Engineering studies
Design and planning

Building commercial
partnerships

Continued work on Task
Forces *Local Jobs* and
Made In Sweden

2019

2018

Develop/sign partner
MoUs covering
strategic collaborations

Drill Kallak South
Exploration Target and
Parkijare Exploration
Licences

2020

Final planning and
design work

Commence work on
Definitive Feasibility
Study

Secure funding

Construction of mine

2021

2022

Construction continues

Mining commences at
Kallak North

2023

...

~2037

Mining transitions to
Kallak South

