

A web app to tell the story of a city

Kiruna, Sweden

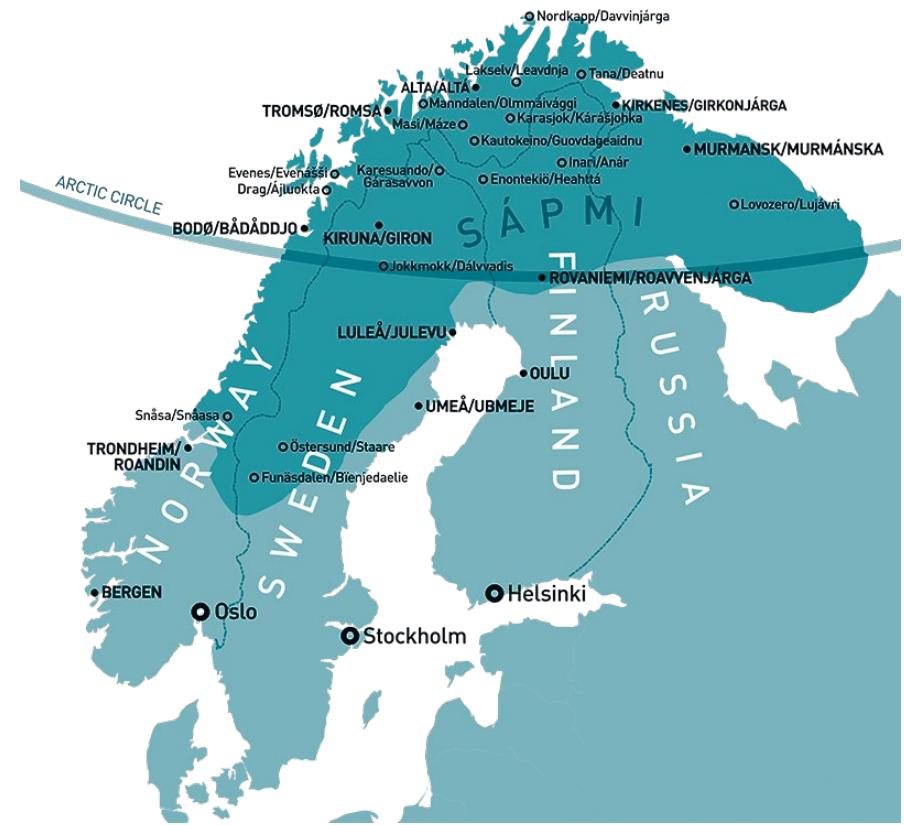




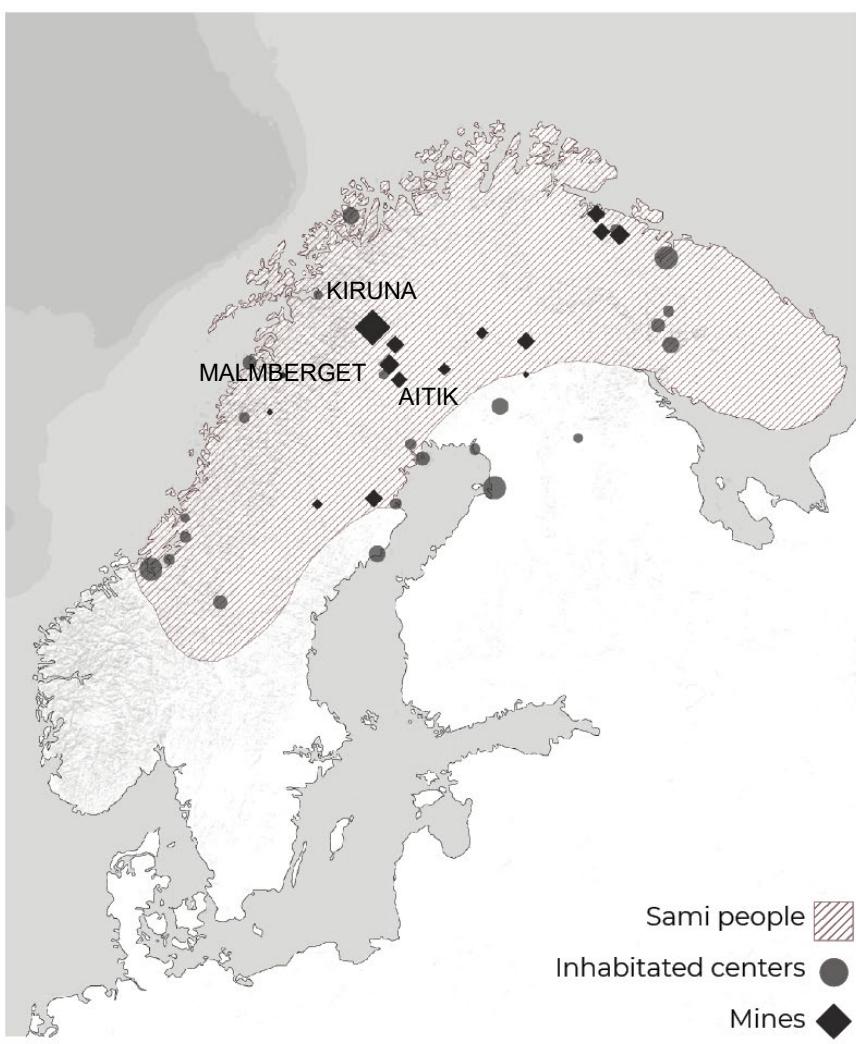
- 20,000 inhabitants
- Located **140 km** north of the Arctic Circle
- Lowest recorded temperature **-42 °C**
- **45 days** of Midnight Sun each year
- **21 days** of Polar Night
- Covered in snow for **8 month** each year

First colonization of Norrbotten

Sapmi, the land of Sami people



Reindeer herding and husbandry



Second colonization

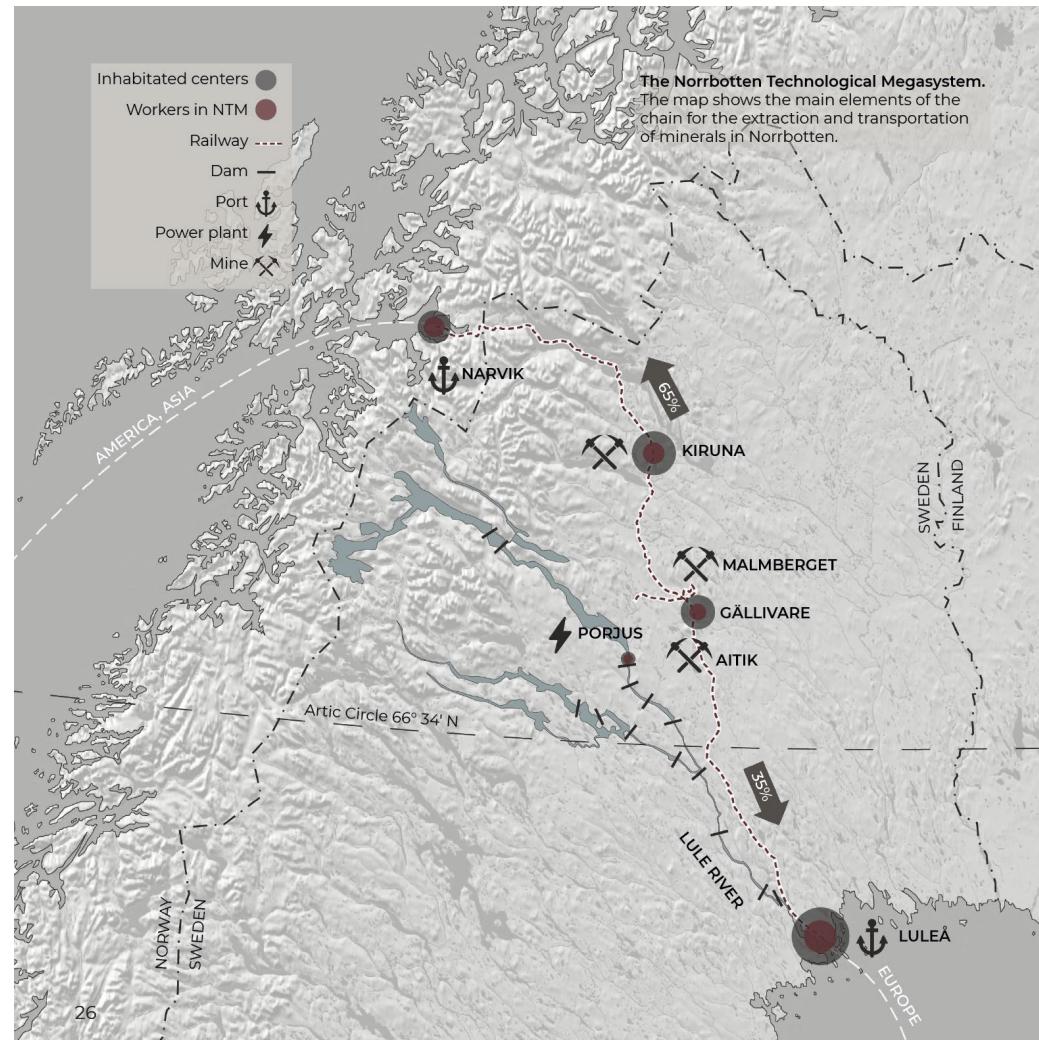
- Late 19th century
- **83%** of Europe's iron ore
- **3.5 billion euros** in annual revenues
- **0.7%** of Sweden's GDP



Norrbotten Technological Megasystem

Hansson S.

- Gallivaare out of 15,000 **15%** employed in the mine
- Kiruna out of 20,000 **20%** employed in the mine
- Railway **520 km** (single-track line)
- **10** trains to Narvik **5** trains to Luleå each day
- Transporting **80,000 tons** of iron ore per day
- Luleå: **25%** of the population works in the port
- Narvik: **30%** of the population works in the port
- Porjus power plant produces **417 MW**
- Of which **75%** used for mineral extraction



Kiruna, 1900



Hjalmar Lundbohm
Kiruna's founder and LKAB first head manager

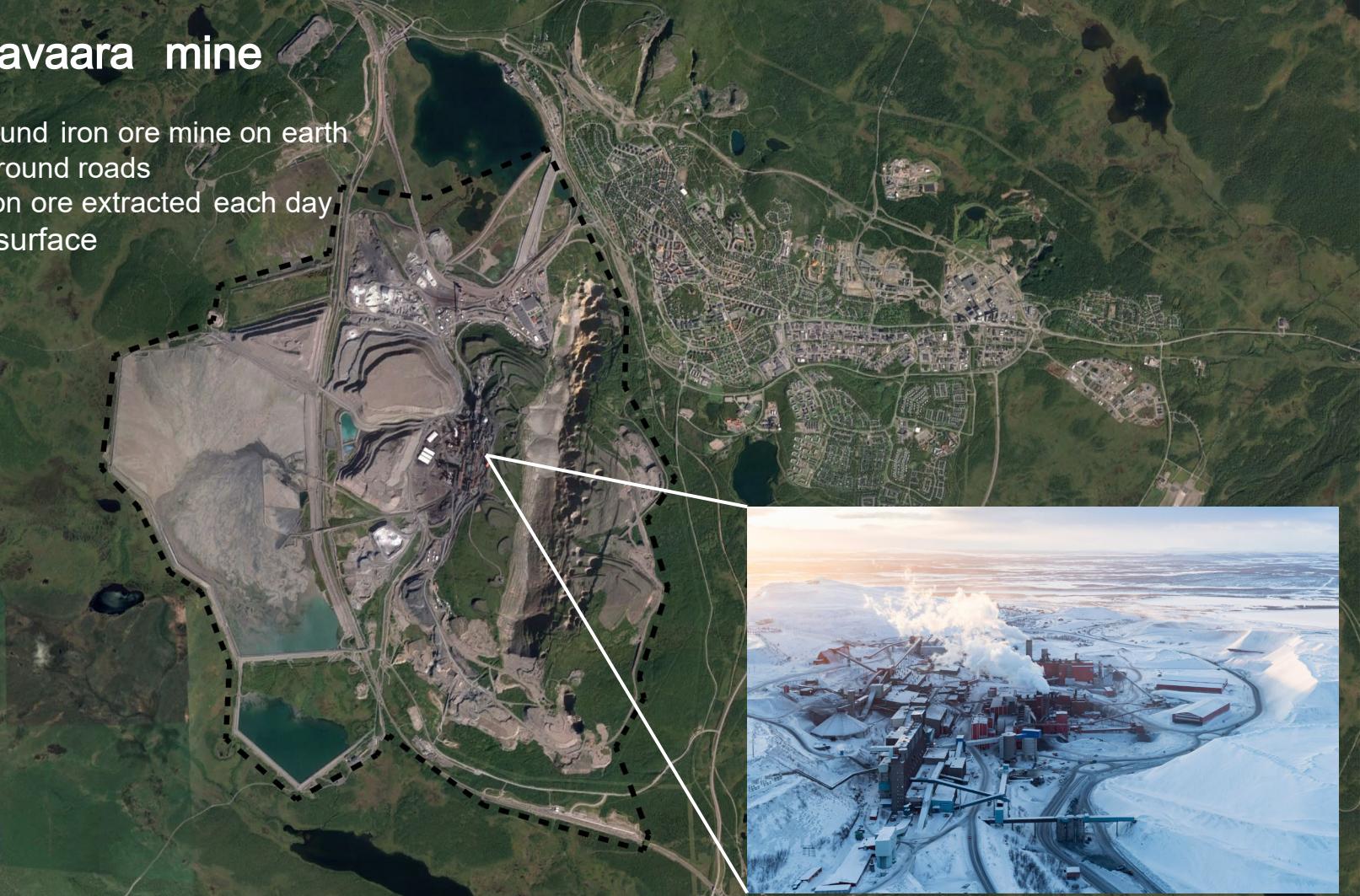
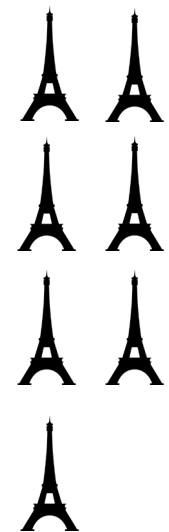
Kiruna's relocation process

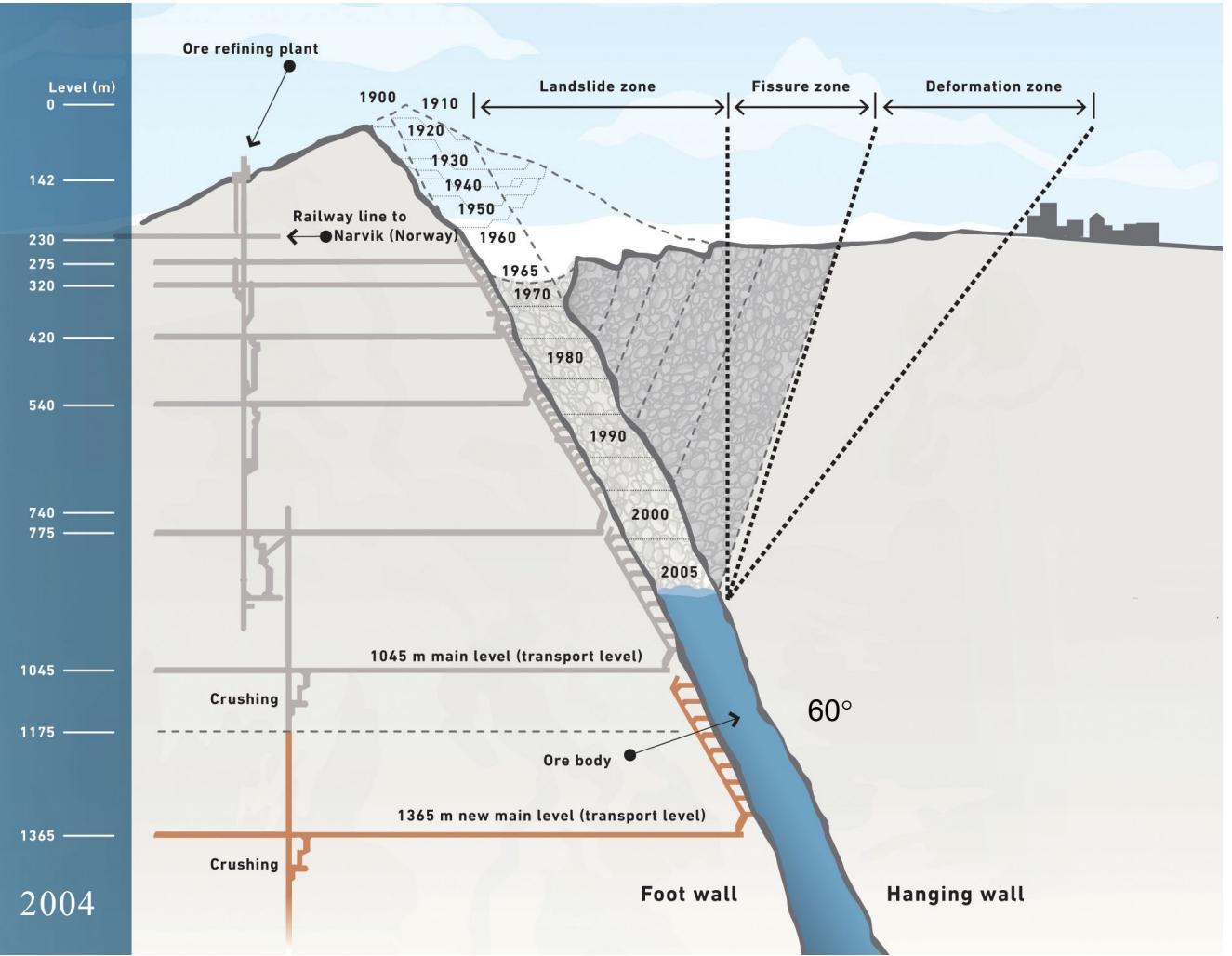
2004-2035



Kiirunavaara mine

- Largest underground iron ore mine on earth
- 500km of underground roads
- 68,000 tons of iron ore extracted each day
- 1,365 m below surface
- Run by LKAB





Kiruna's relocation

3 actions

Demolition



Construction

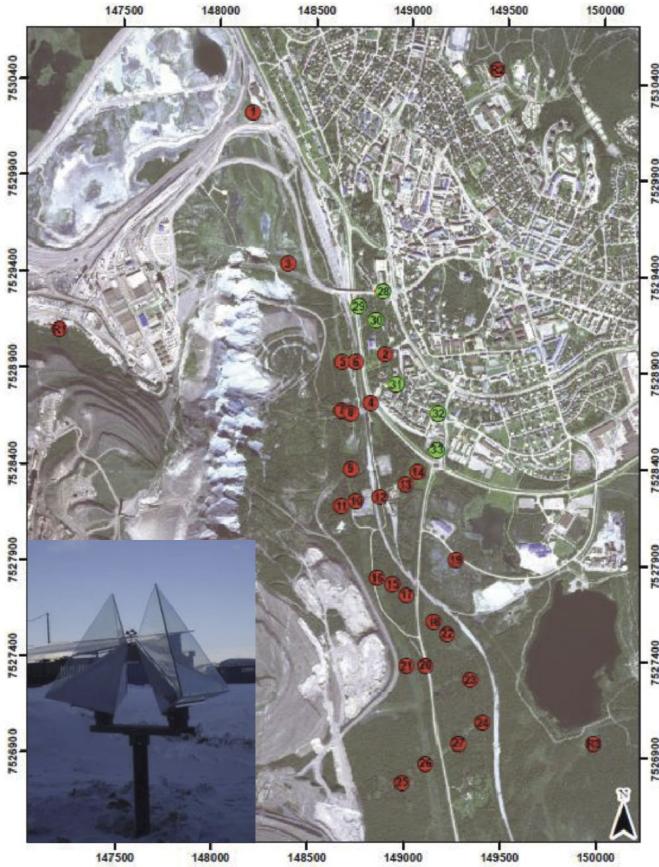


Moving



Demolition

Monitoring



By LKAB - 0.3% Horizontal - 0.2% Vertical



Demolition

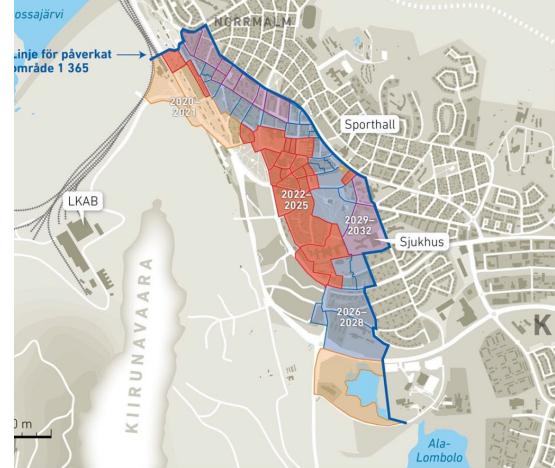
Mapping deformation forecasts



2004



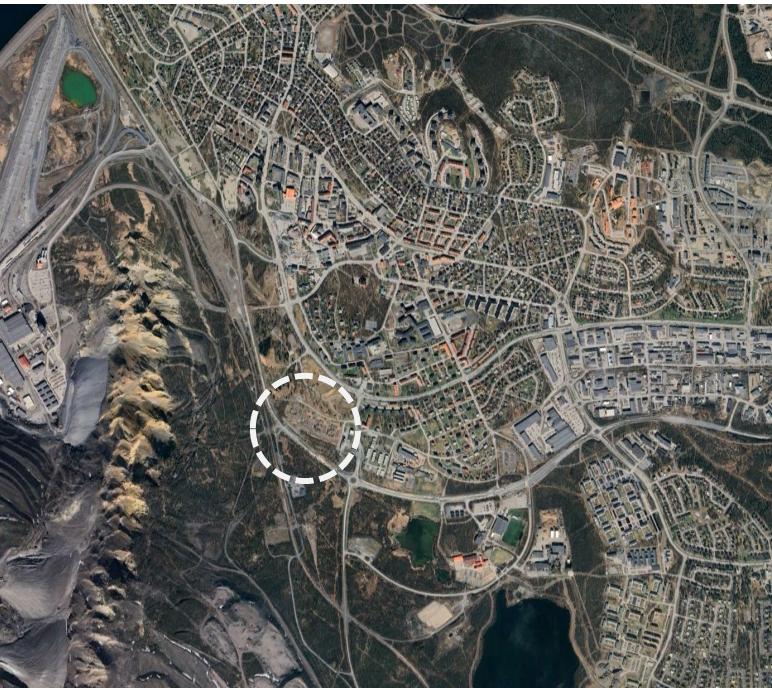
2014



2019

Demolition

Where are we at?



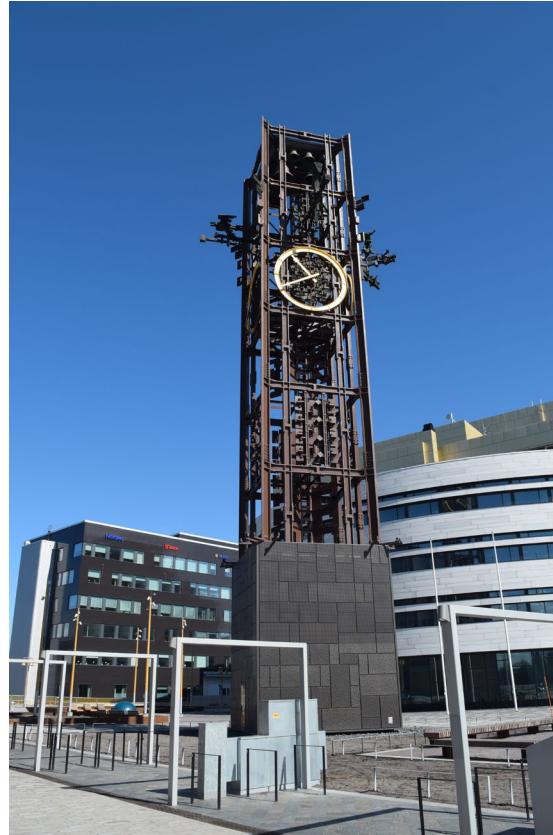
Demolition of Ullspiran, March 2014

Demolition

Where are we at?



Decommissioning of Townhall, April 2019



Townhall's clock tower



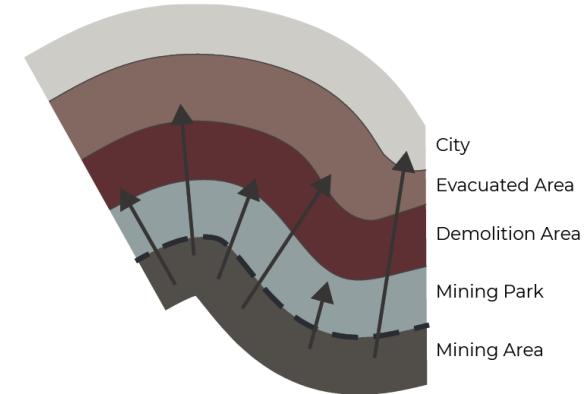
Handles of main door

Demolition

Where are we at?



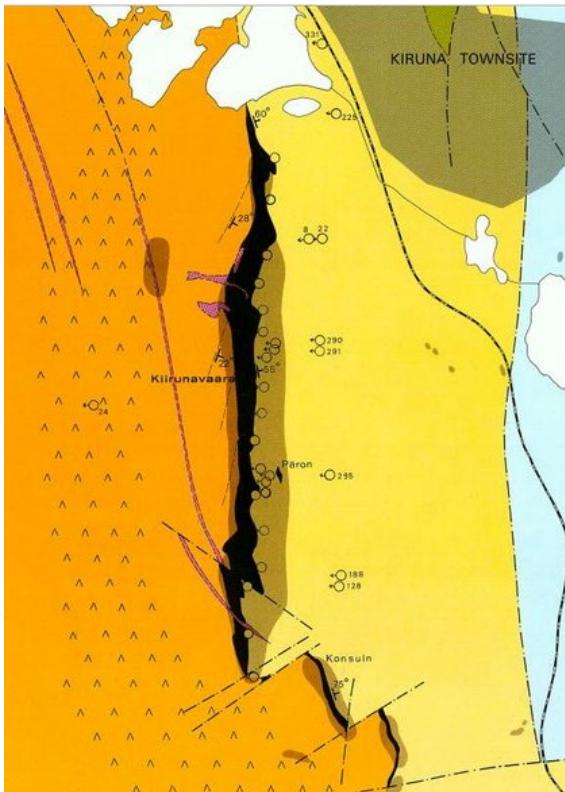
Gruvstads park



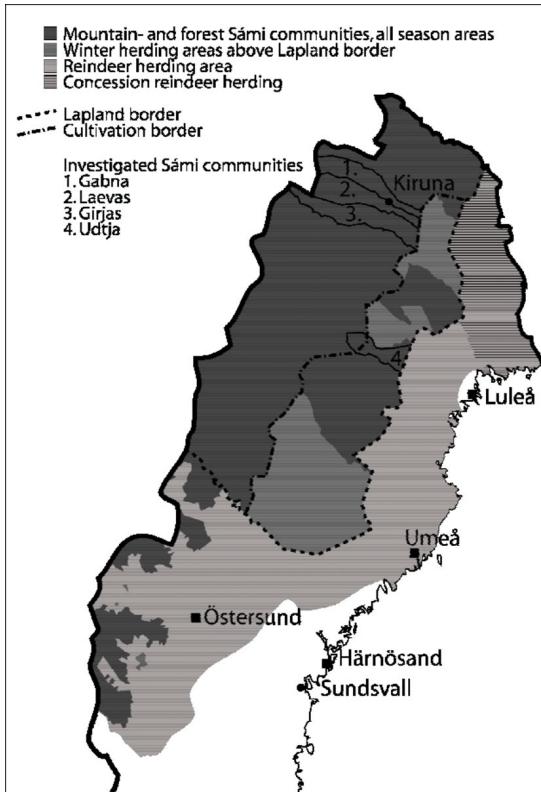
Mine expansion scheme

Construction

many national interests & space paradox



Mineral act of 1991



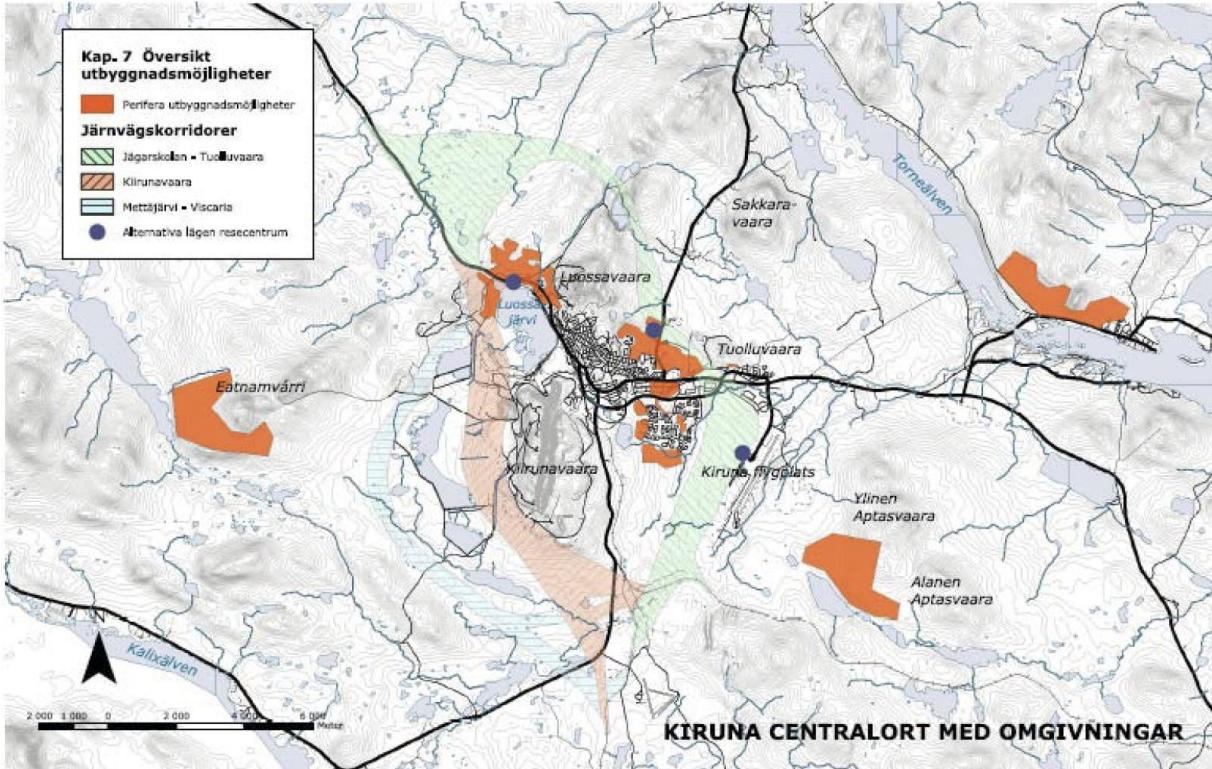
Reindeer grazing law of 1886



National nature conservation interest

Construction

Where to move the city? (6 hipotesis + 1)



- 1 Eatnamvarri
- 2 Apatsvaara
- 3 Jukkasjarvi
- 4 Loussavaara
- 5 Tuolluvaara
- 6 Loussavaara&Tuolluvaara

Construction

Architecture competition

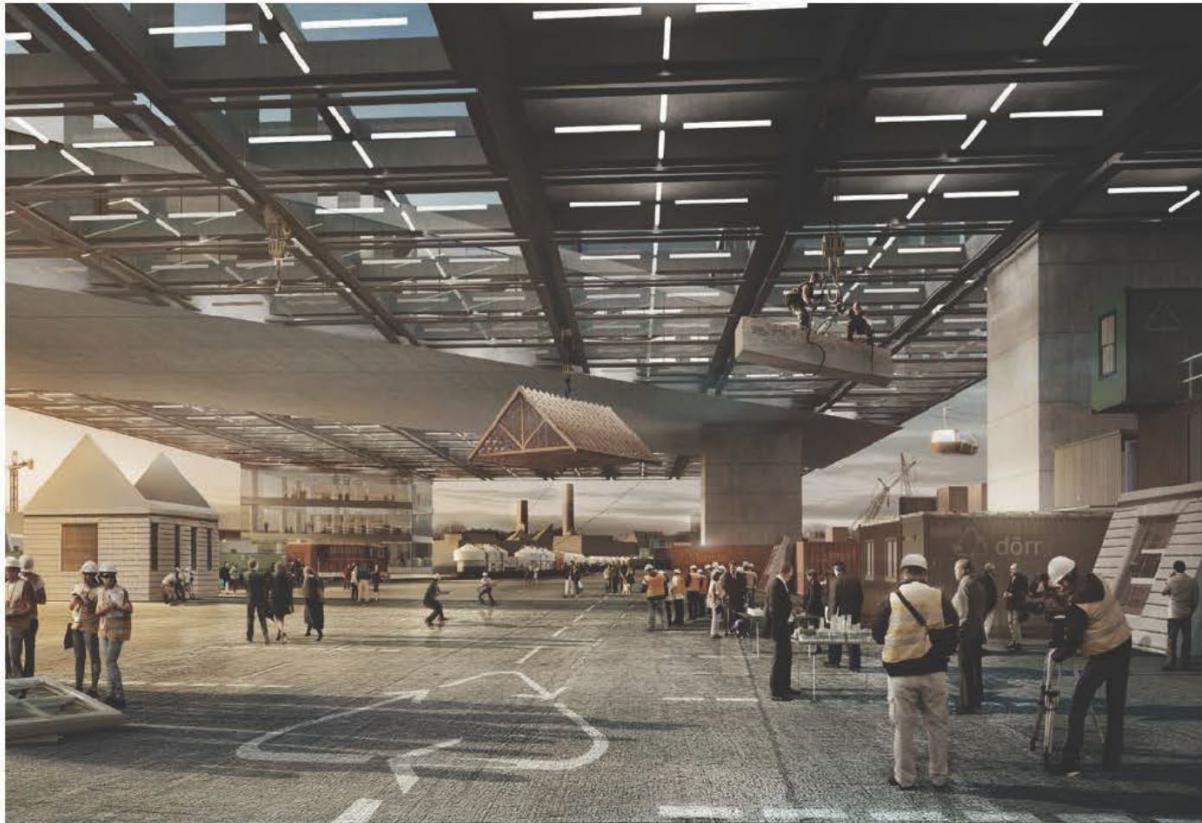


First phase

- 1 phase
- 10 finalist
- 45,000€ price
- 2 Phase
- 70 pages architecture brief
- Winner gets to design the new city

Construction

Winning project: Kiruna Forever



Kiruna portal

- White architekter urban planning
- Ghilardi + Hellsten urban planning
- Spacescape flows studies
- Vectura consulting transportation
- Evidens BLW economic sustainability

Construction

Winning project: Kiruna Forever



Development Plan

Construction



New Townhall square (Kiruna Forever)

Construction

Where are we at



New Townhall, 2015-2018

- Detail planning by Municipality
- Funded by LKAB
- Architectural design by private firms



Construction

Where are we at



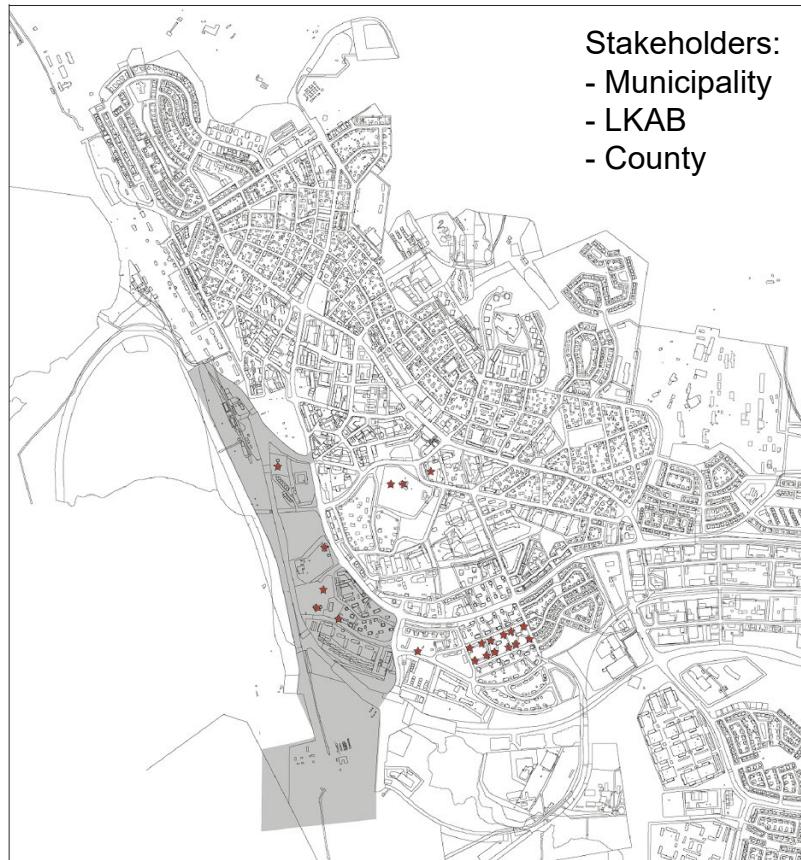
- Scandic Hotel (2019-2022)
- Aurora Congress Center (2019-2022)
- Block 1 (2019-2022)
- Blocks 7,8,9 (2019-2022)
- City center inauguration (Sep. 2022)
- Hjalmar Lundbohm school (2020-2023)
- Police station (2020-2023)
- Bathouse (upcoming)

Kiruna in 2023

Moving



Conservation Plan 1984 (8 areas more than 200 buildings)



Agreement on building relocation 2013 (21 Buildings)

Stakeholders:

- Municipality
- LKAB
- County

Moving

First moving phase



- 8 buildings moved
- 1 building in new city center
- 7 buildings in Loussavaara

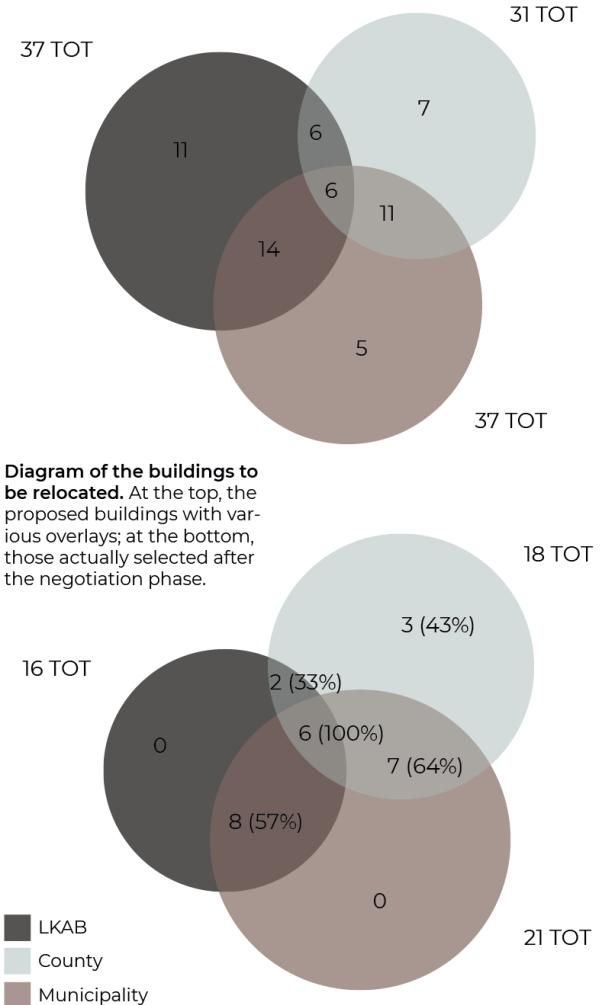
Building B5 (first building moved in Kiruna in 2017)

Moving

Second Agreement 2019 (41 building)



Kiruna's Church



Moving

Second Moving phase



- 2019-2022
- 12 buildings moved
- Location: New city center



Moving

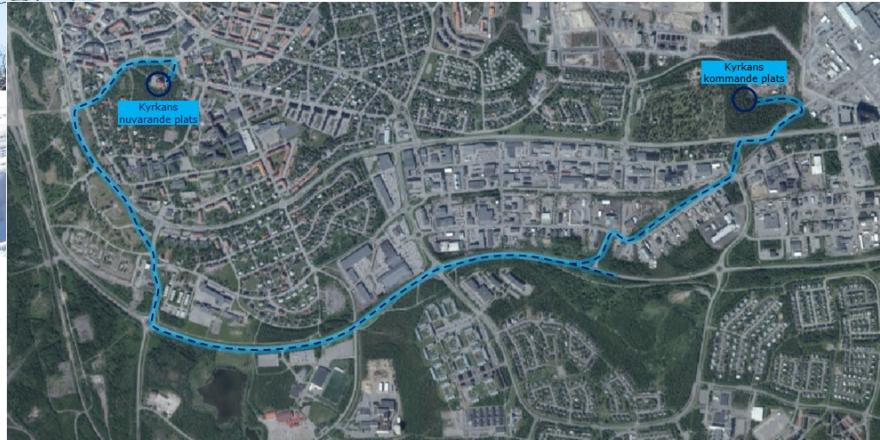
Next phase



Kiruna's church (May 2024)

<https://samhallsomvandling.lkab.com/en/project/kiruna-church/>

- Designed by Gustav Wickman
- Built between 1909 and 1912
- Voted most beautiful building in Sweden build before 1950
- Dimensions: 40m x 40m x 50m
- Weight approximately 600 tons
- Closed on 2th June 2024
- Transportation scheduled for summer 2025
- Reopening scheduled for 2027



Our work in Kiruna

HOW TO MOVE A

CITY



Politecnico di Torino/Department of Architecture and Design/Master's
Degree in Architettura costruzione città/Academic Year 2023/2024/Master's
Thesis/Professor Valeria Federighi/PhD students Camilla Forina, Tommaso
Listo, Luciana Mastrolia/Municipality of Kiruna Sofia Lagerlöf Määttä, Clara
Nyström/Student Giovanni Ceselli

PHASE 1

- Research and analysis of the documents.



PHASE 2

(Trip to Kiruna)

- Reorganization of documents through interviews and site visits.

- Drafting the tales.

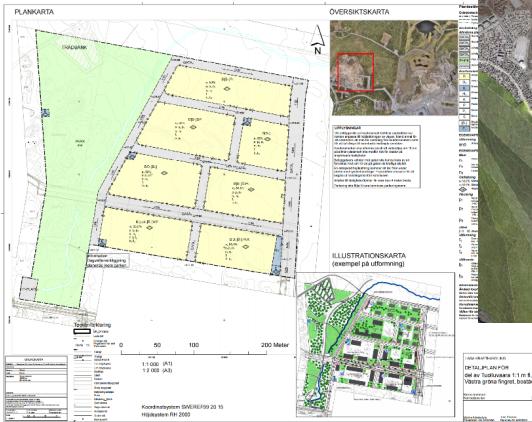
- Reorganizing the stories into a hypertext.



PHASE 3

- Design a web app for Kiruna kommun

PHASE 1

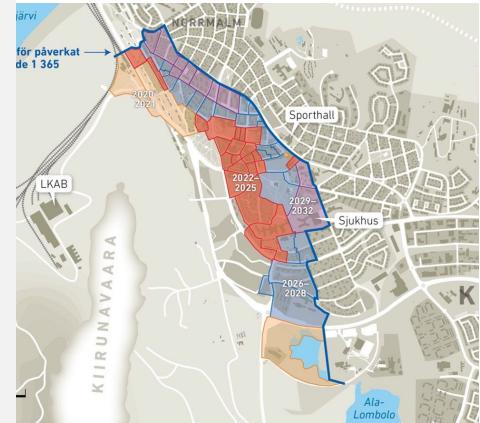
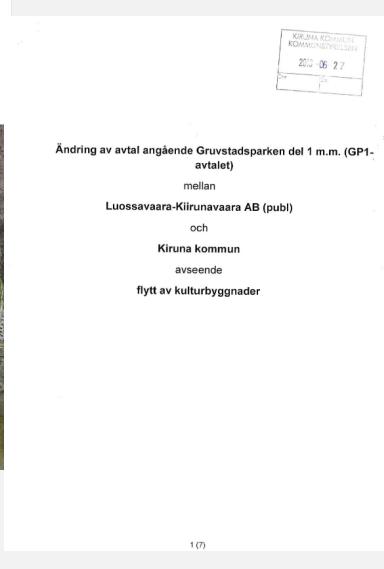


A NEW CITY CENTRE FOR KIRUNA

JURY PRONOUNCEMENT, MARCH 2013



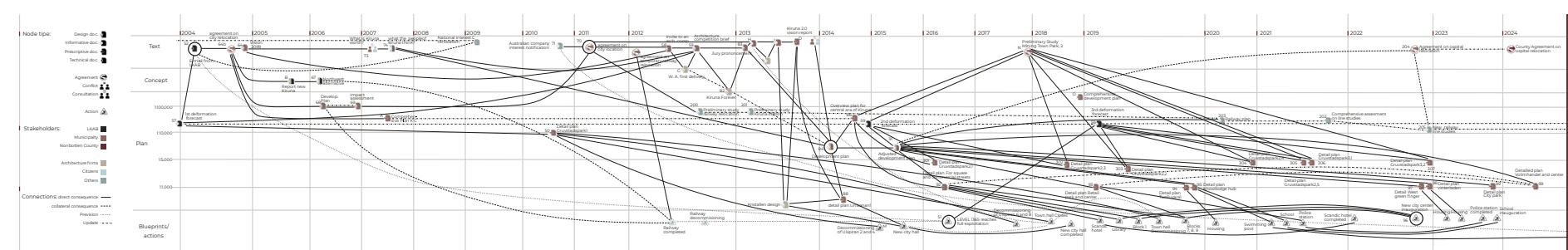
Competition



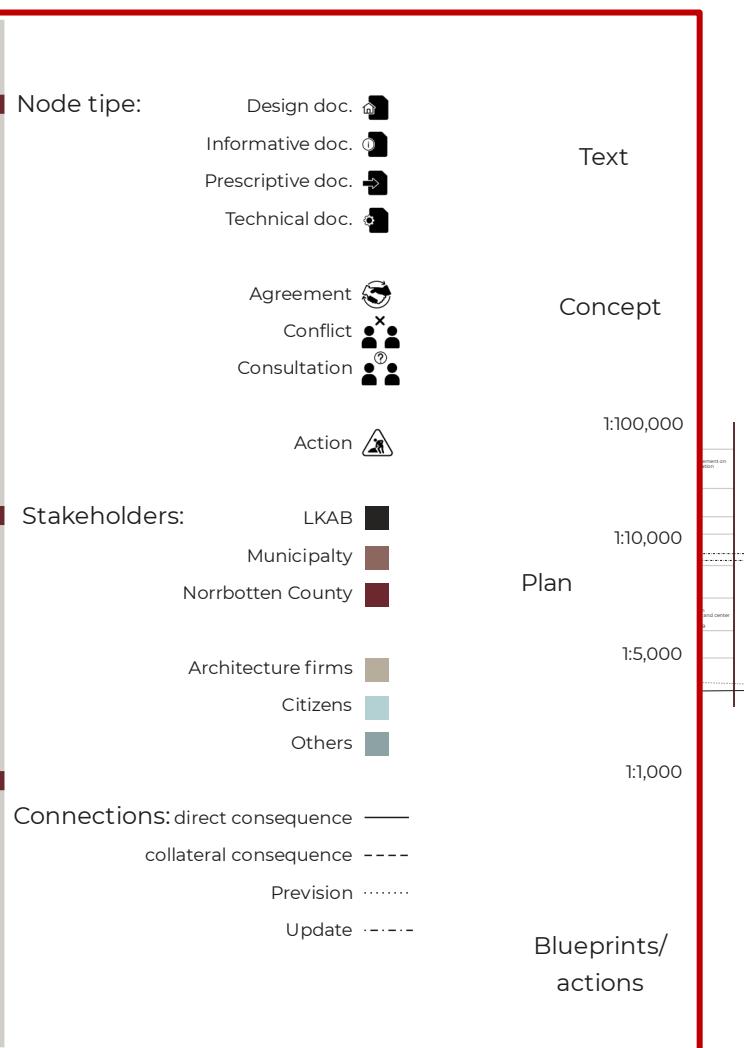
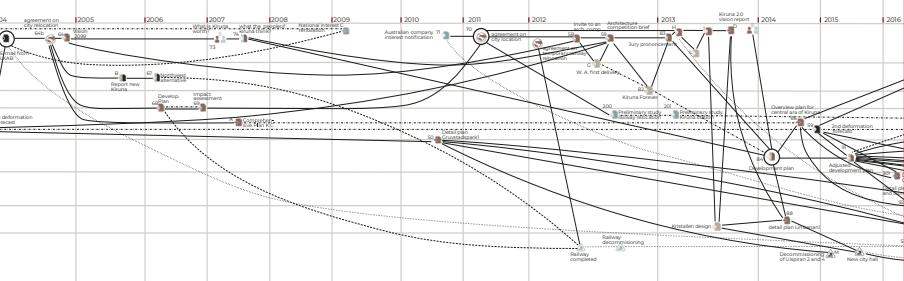
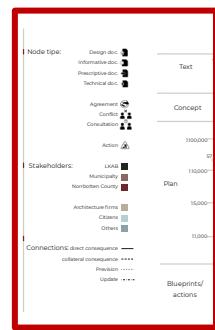
Mapping the process of Kiruna relocation starting from the DOCUMENTS (2004-2024)
-Which ones?

PHASE 2

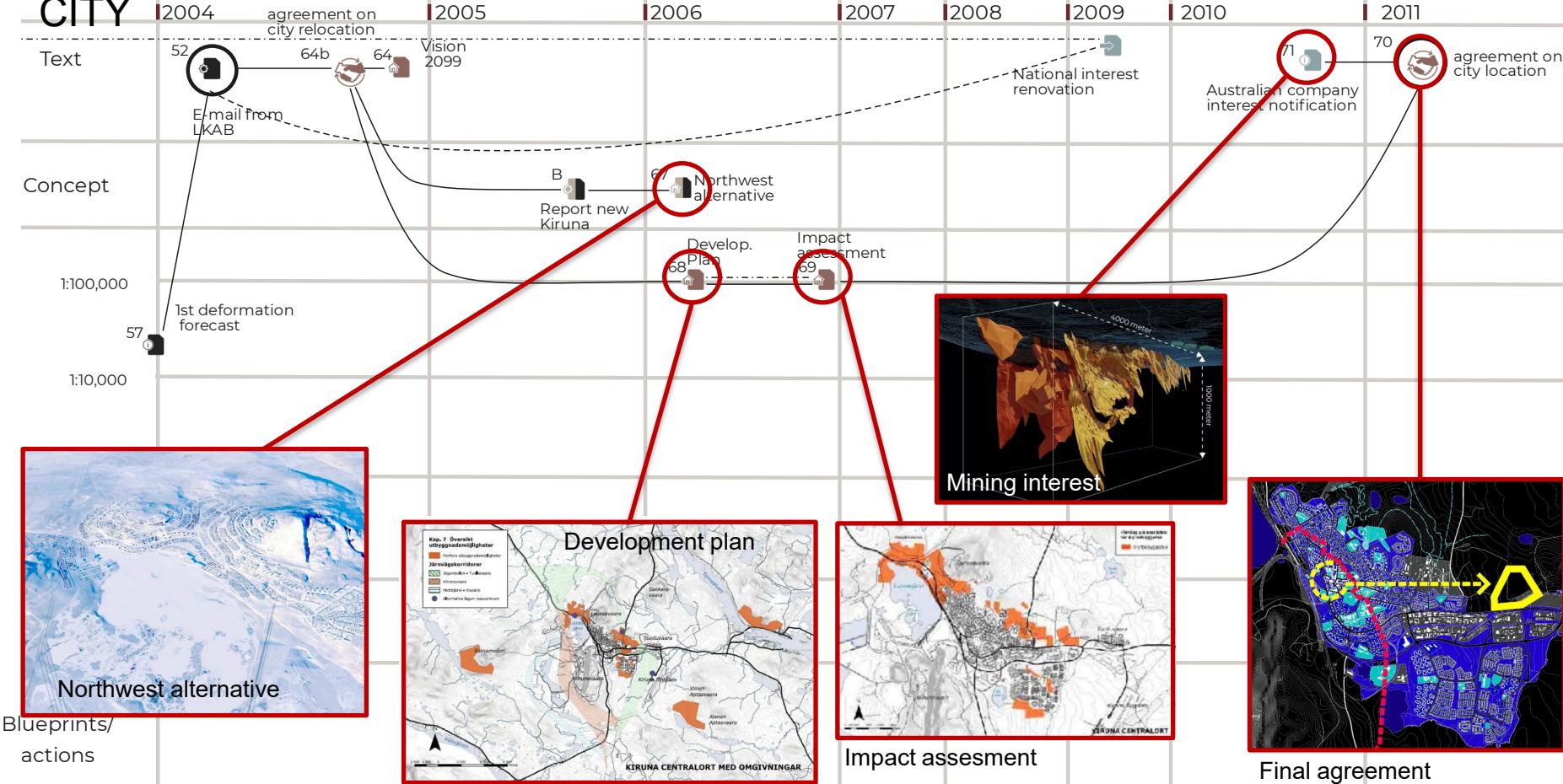
- 8 interviews
- Site visits
- Events
- Reorganization into 17 stories
- Combine the stories into a diagram



PHASE 2



WHERE TO MOVE THE CITY

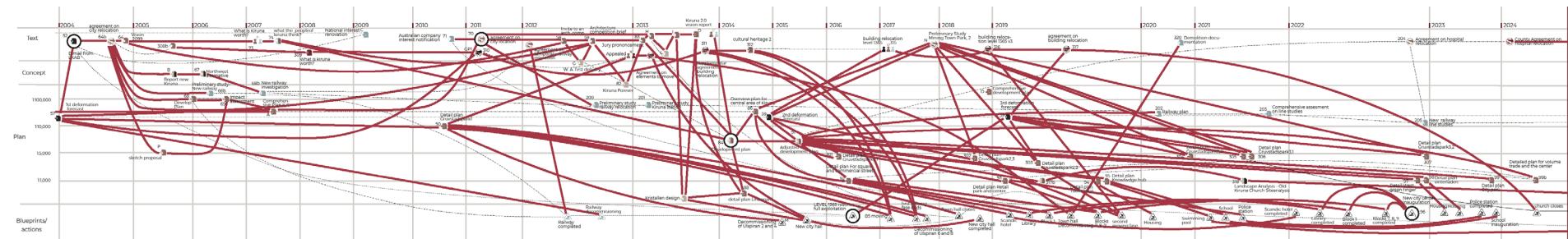


PHASE 2

- Ex post Considerations

DIRECT CONSEQUENCE CONNECTIONS

a document explicitly anticipates the creation of another



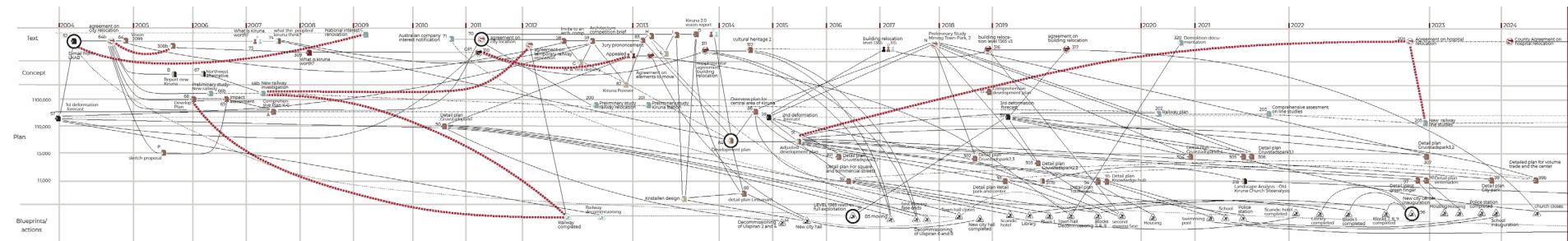
- 75% downwards

PHASE 2

- Ex post Considerations

COLLATERAL CONSEQUENCE CONNECTIONS

whenever a node has an unforeseen impact that leads to the creation of another



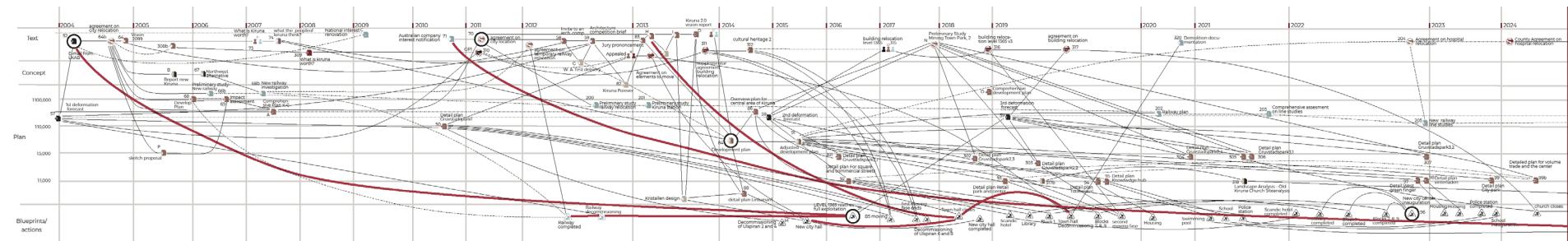
- 50% downwards, 50% upwards

PHASE 2

- Ex post Considerations

PROJECTION CONNECTIONS

but the resulting document precedes the generating document



-Average lenght: 7 years
-100% downwards

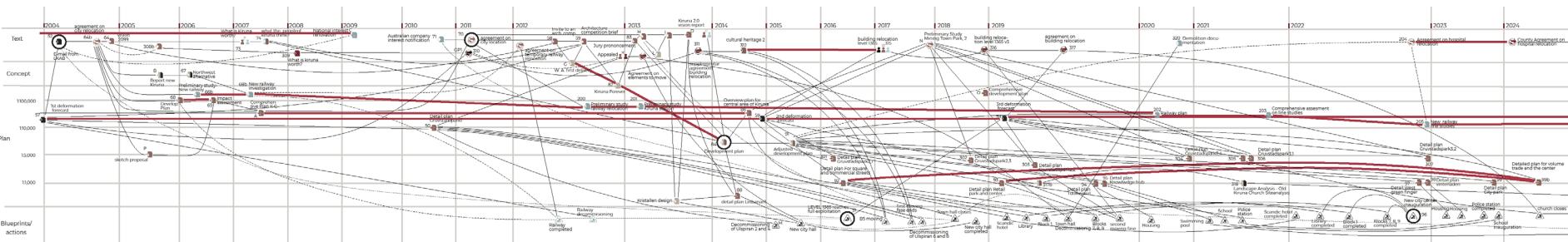
FASE 2



- Ex post Considerations

UPDATE CONNECTIONS

~~connects two documents that perform the same function but succeed each other over time~~



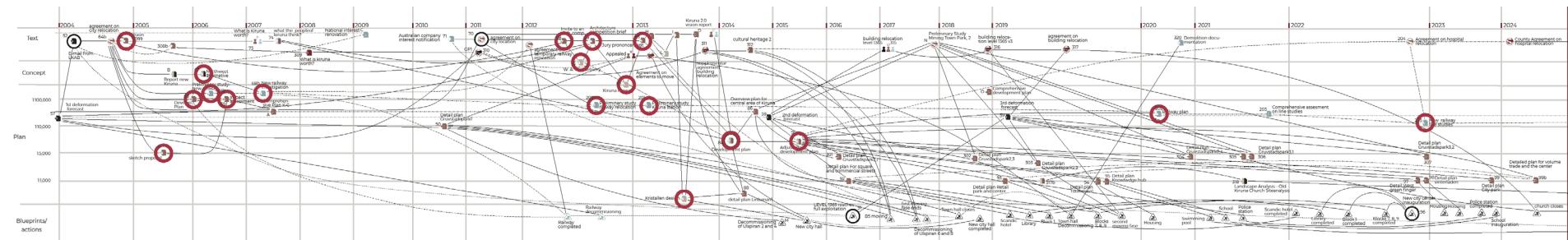
- Almost only horizontal

PHASE 2

- Ex post Considerations

DESIGN DOCUMENT

strong design focus

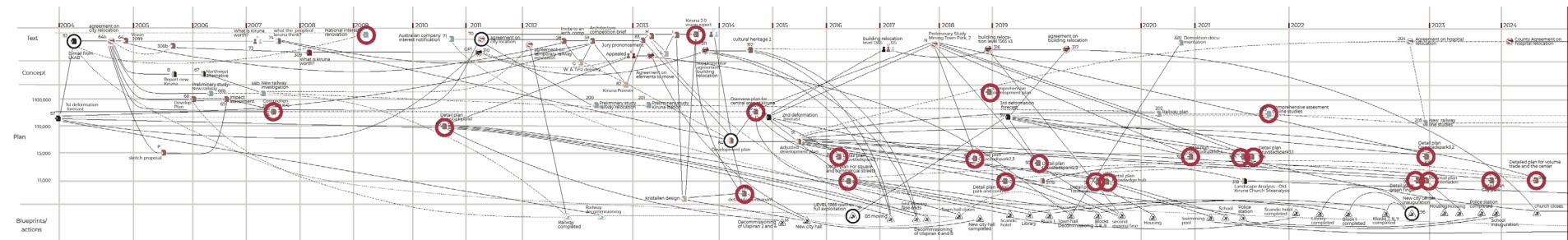


75% before 2014

PHASE 2

- Ex post Considerations

PRESCRIPTIVE DOCUMENT characterized by its authority

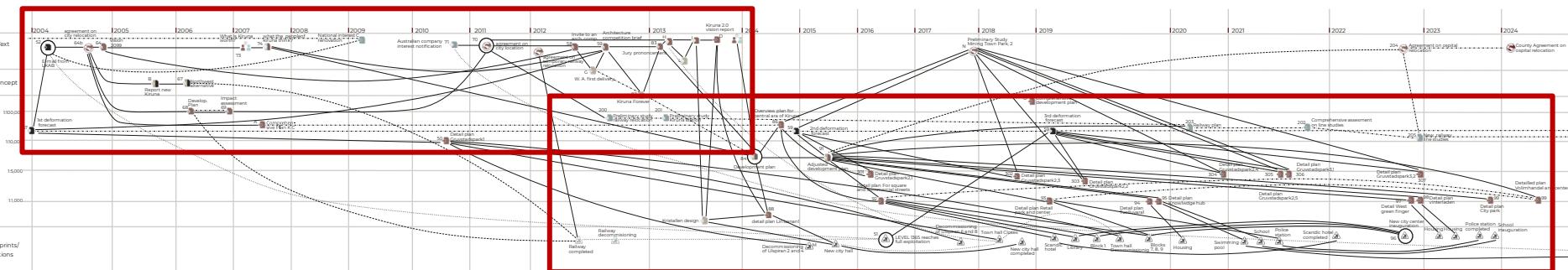


80% after 2014

PHASE 2

- General trend
- Butterfly shape

Planning (2004-2014)



Urban metamorphosis (2012-2035?)



PHASE 3 (web app)

Users:

- Urban planners
 - Residents
 - Visitors
 - Urban developers
 - 2 user Interfaces