

# Land Use Conflicts

In Northern Sweden

Kristina L Nilsson  
Prof. em. in Architecture



Samebyar

# Sami Swedens Indigenous People



Photo Mats Andersson Wikipedia



1000 reindeer herding companies in Sweden

LULEÅ  
TEKNISKA  
UNIVERSITET





# Norrbotten Technological Mega System



Concept from Prof. Staffan Hansson LTU 19

# Tourism

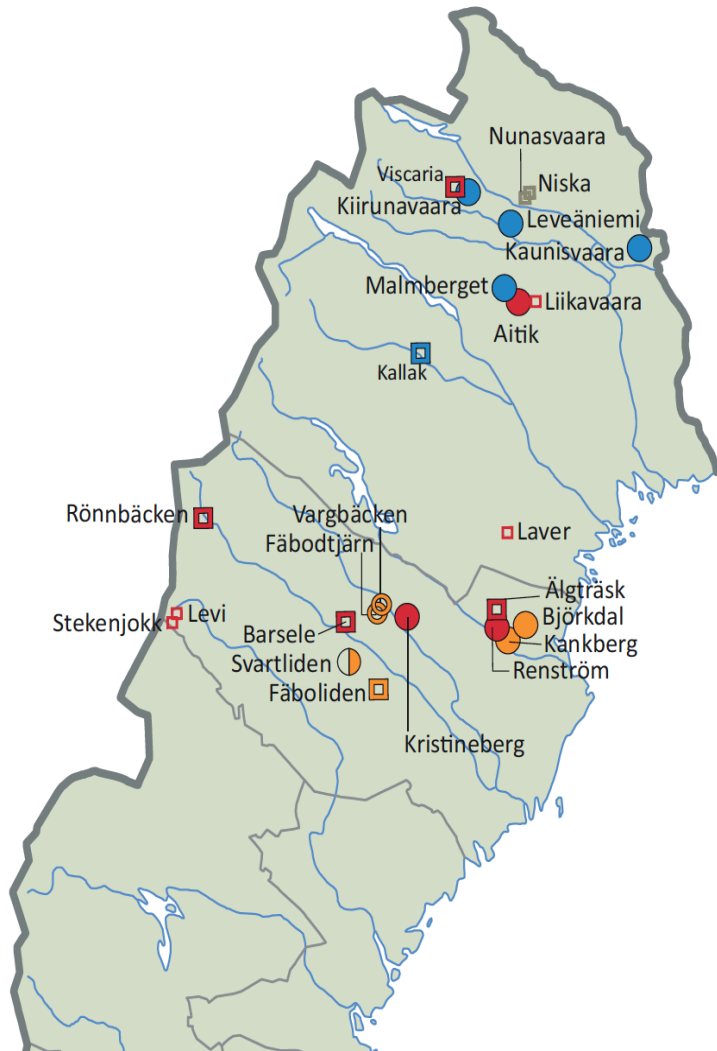
Conflicts between  
Reindeer herding  
Different parts of tourism  
Military low flying





ca 12 metallgruvor i drift

- Järnmalm  
*Iron ore*
- Järn och annan metall  
*Iron and other metal*
- Basmetaller  
*Base metals*
- Basmetaller och guld  
*Base metals and gold*
- Guld  
*Gold*
- REE  
*REE*
- Industrimineral  
*Industrial mineral*
- I produktion  
*In production*
- Endast anrikning, ingen brytning  
*Only concentrate, no mining*
- Kampanjproduktion  
*Campaign Production*
- Ej i drift  
*Nonoperating mines*
- Miljödom klar  
*Granted environmental permit*
- Beviljad bearbetningskoncession,  
väntar på miljöprövning  
*Granted exploitation concession,  
waiting for environmental permit*
- Ansökt bearbetningskoncession  
*Applied exploitation concession*



# Mines

in Norr- & Västerbotten

- Iron
- Base metals, e.g. copper
- REE Rare Earth Elements
- Gold

- Conflicts with
- Reindeer herding
- Urban areas
- Rural residents



# Cities hard affected by mining

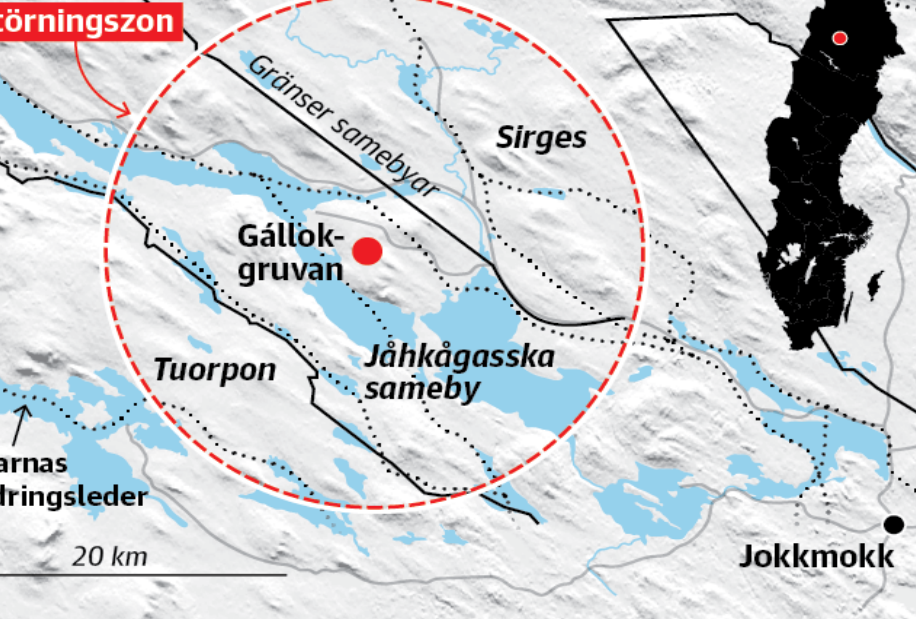
## Kiruna



## Malmberget







# Kallok/Gallok mine investigation

- Beowulf mining British company
- Hard conflicts with reindeer herding
- Long and intense protests
- More hundred years of Sapmi land - against few years of mining
- The Swedish Government has decided that the mining has higher societal importance than reindeer business



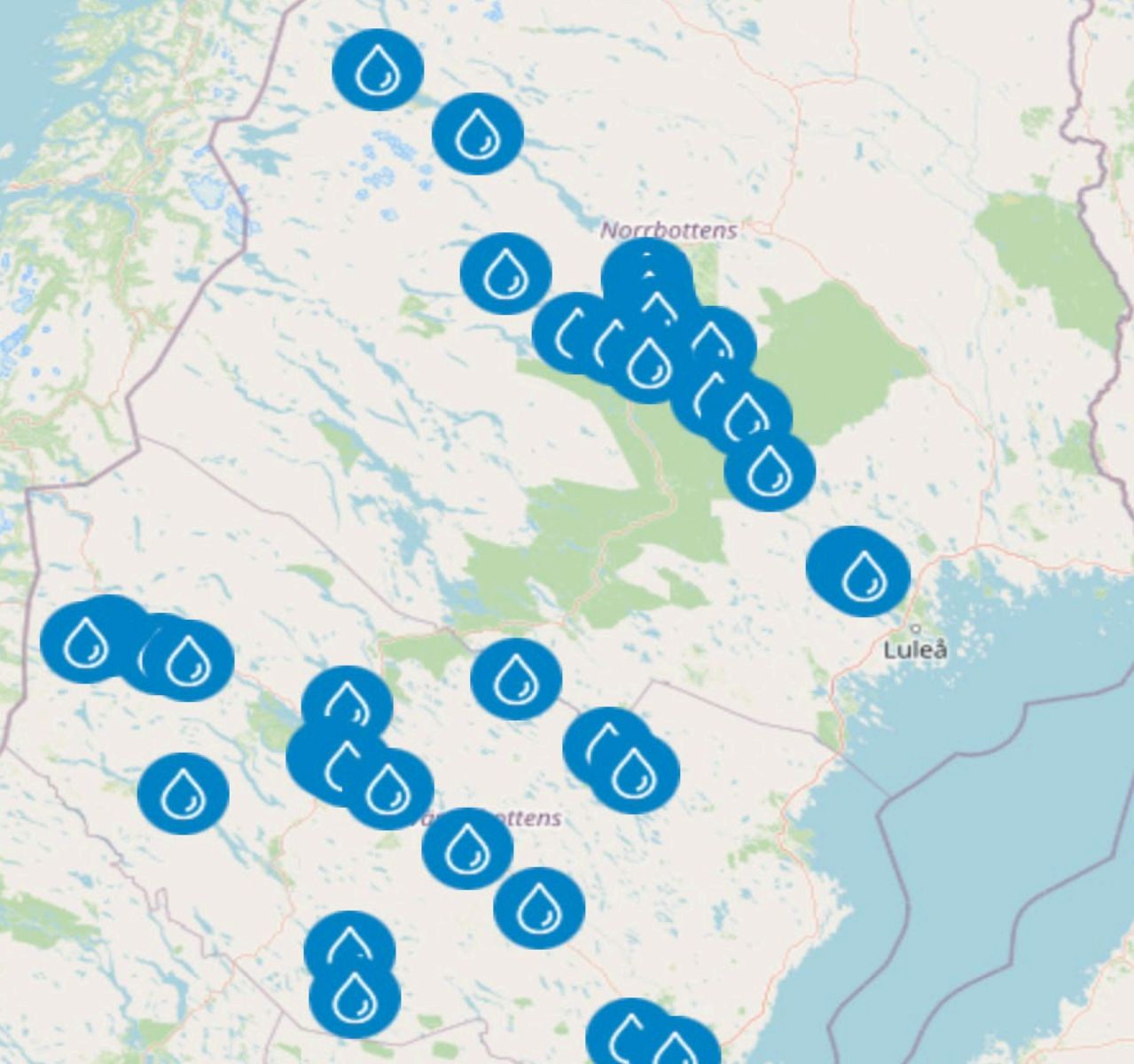


# Hydro power plants



Conflicts with  
Reindeer herding huge  
grassing areas and sami villages drown  
Tourism  
4 free rivers left





# Hydro power plant

First plant 1910

Give together 80 % of  
the hydro energy from  
the North

Plans for efficiency of  
Existing plants

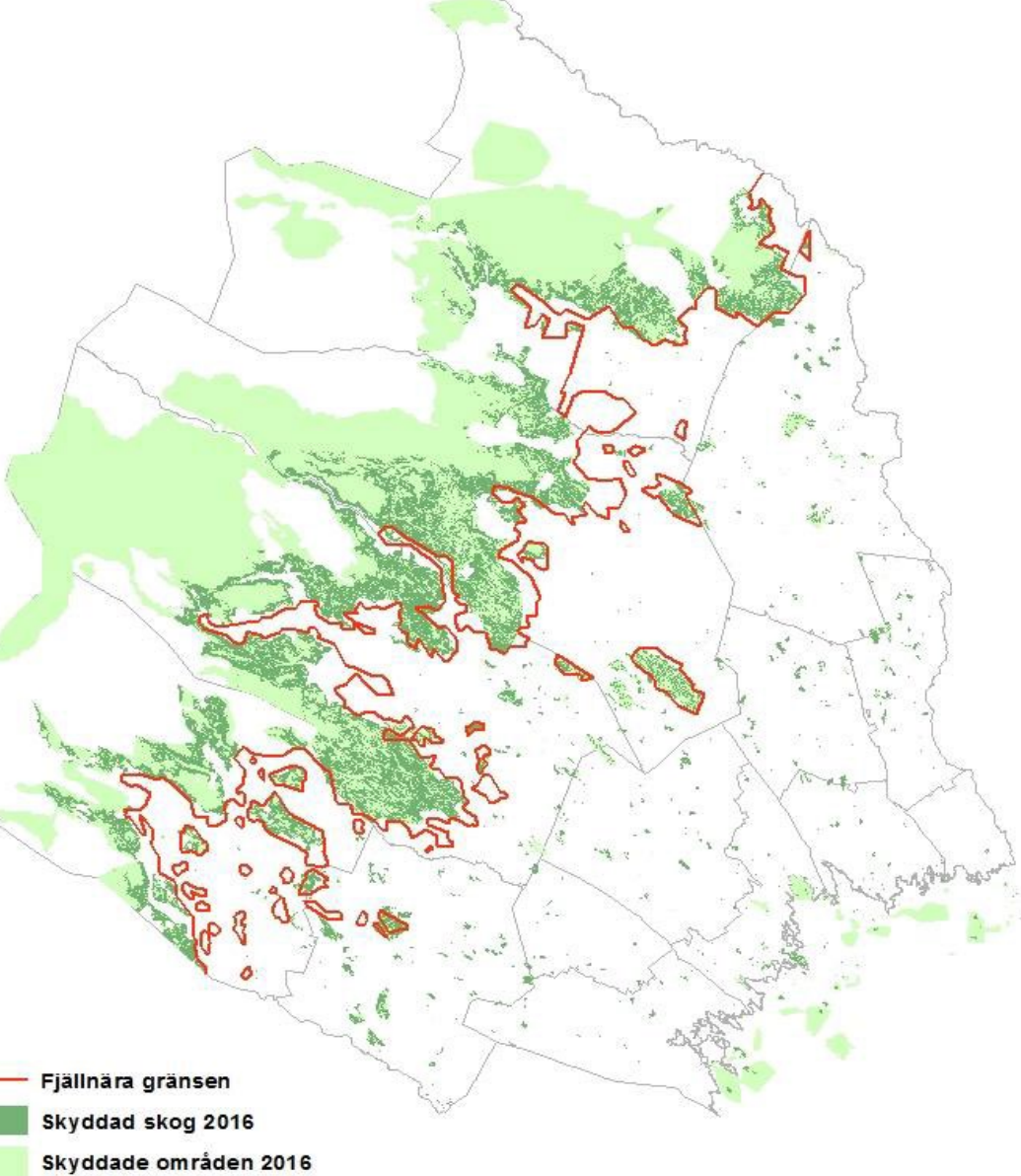
# Forestry

Conflicts with:

Biodiversity

Old wild-wood

Warmer climate higher the tree line and decrease reindeer food





Land based

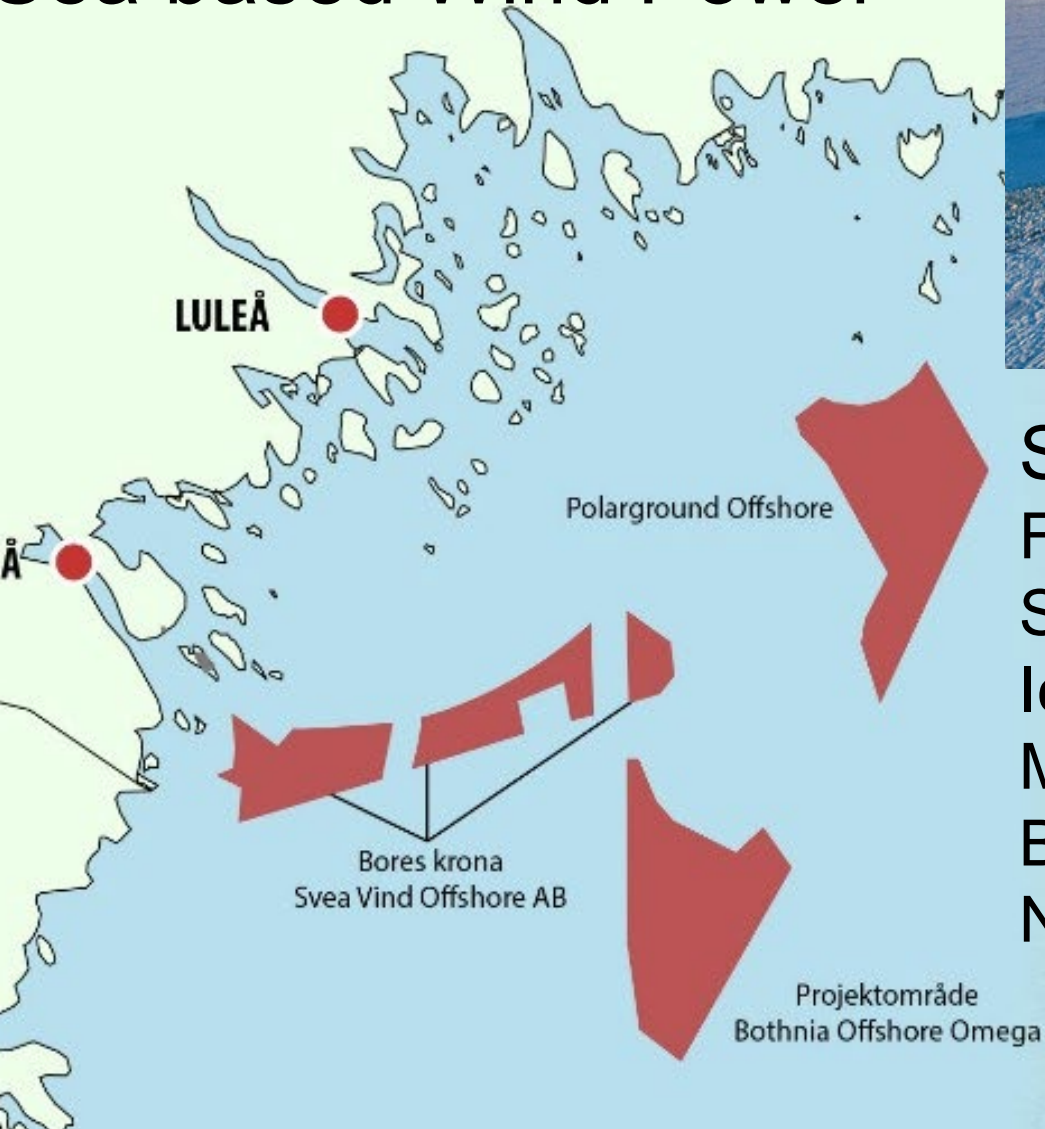
Wind Power



Huge wind parks in the  
inland and mountain  
areas

Conflicts with:  
Reindeer herding  
Military low flying exercise  
Birds

# Sea based Wind Power



Sea uses conflicts with  
Fishing  
Sea transports  
Ice braking  
Military  
Birds  
Neighbouring Finland





# The New Green Industrialisation



The planned industry establishments in North Sweden require 70 TWh electricity within two decades. It is more than half of Sweden today's yearly usage.







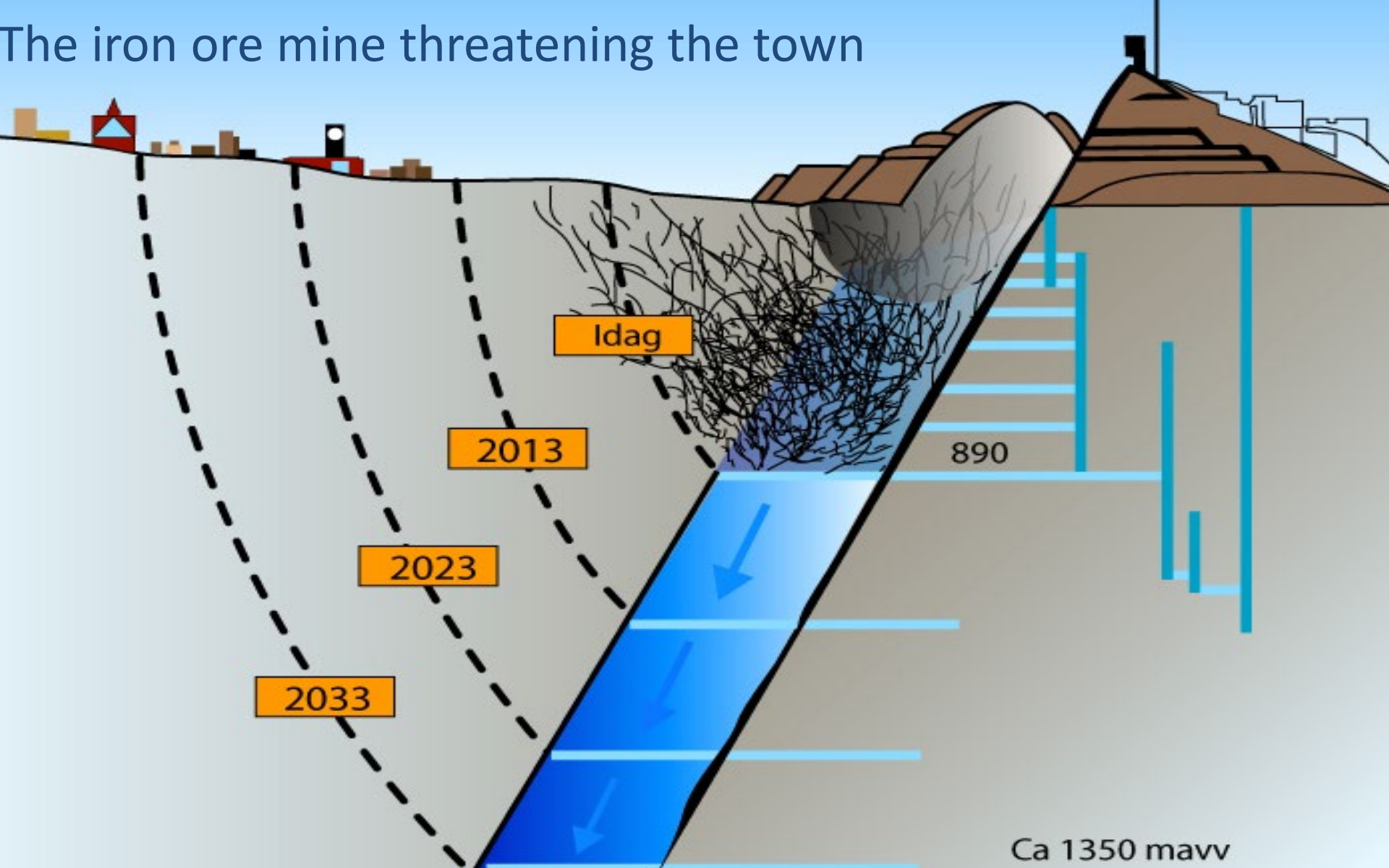
Skandinavien's nordligaste tekniska universitet  
Forskning & utbildning i världsklass

# Kiruna Mining and Urban Transformation





# The iron ore mine threatening the town



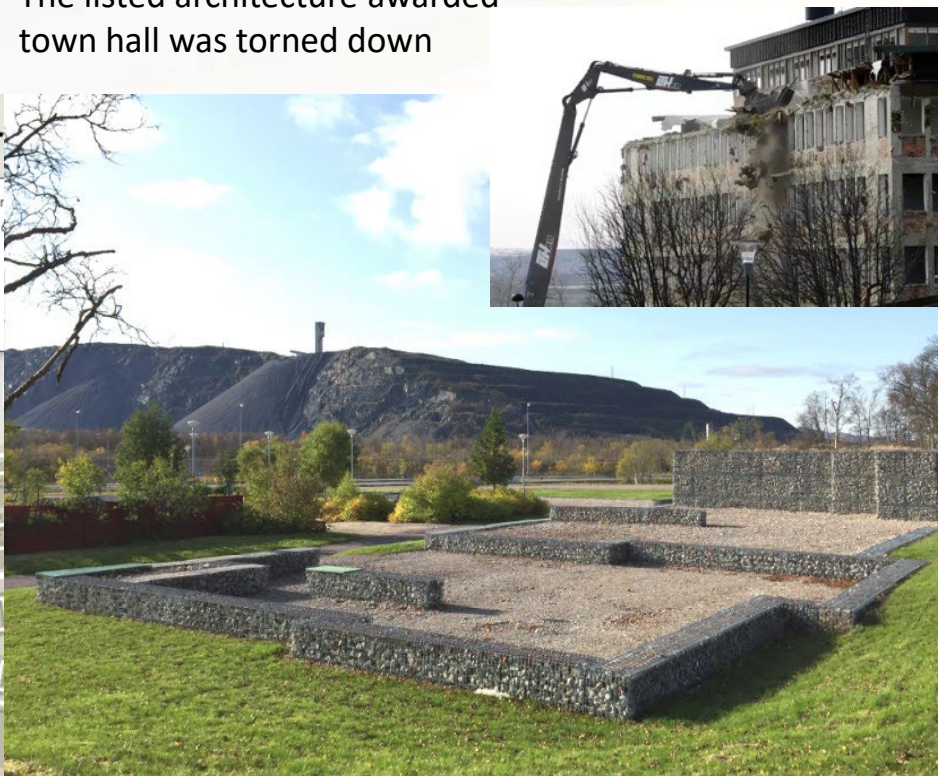
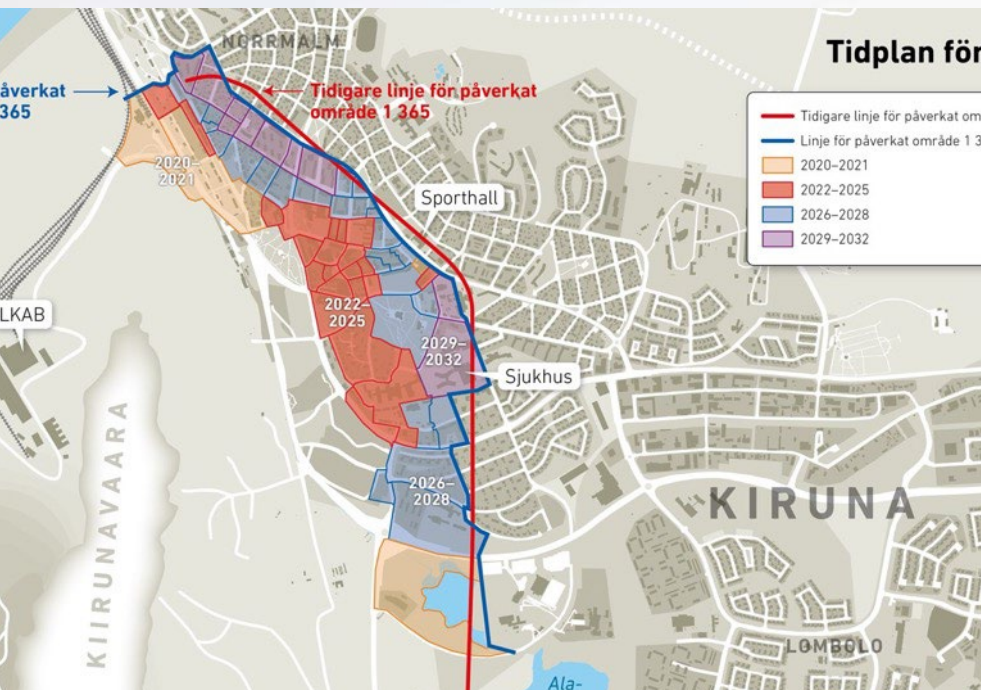


# Growing ground deformation

Cracking zones  
of the existing town must be  
moved

The left parts are used as urban  
mining park (gruvstadsparker)

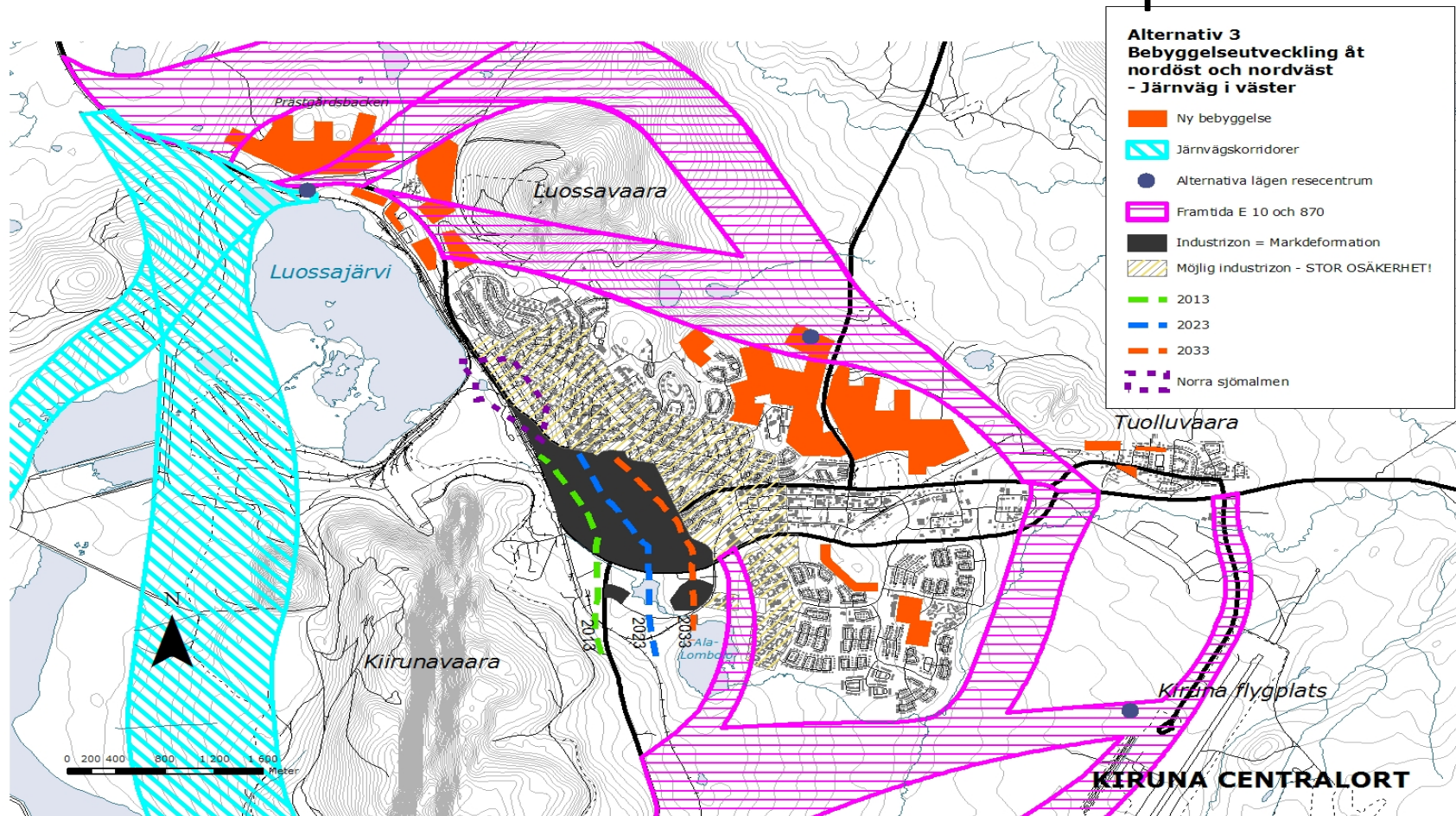
The listed architecture awarded  
town hall was torn down





# Local authority comprehensive plan

## alternative directions of urban expansion

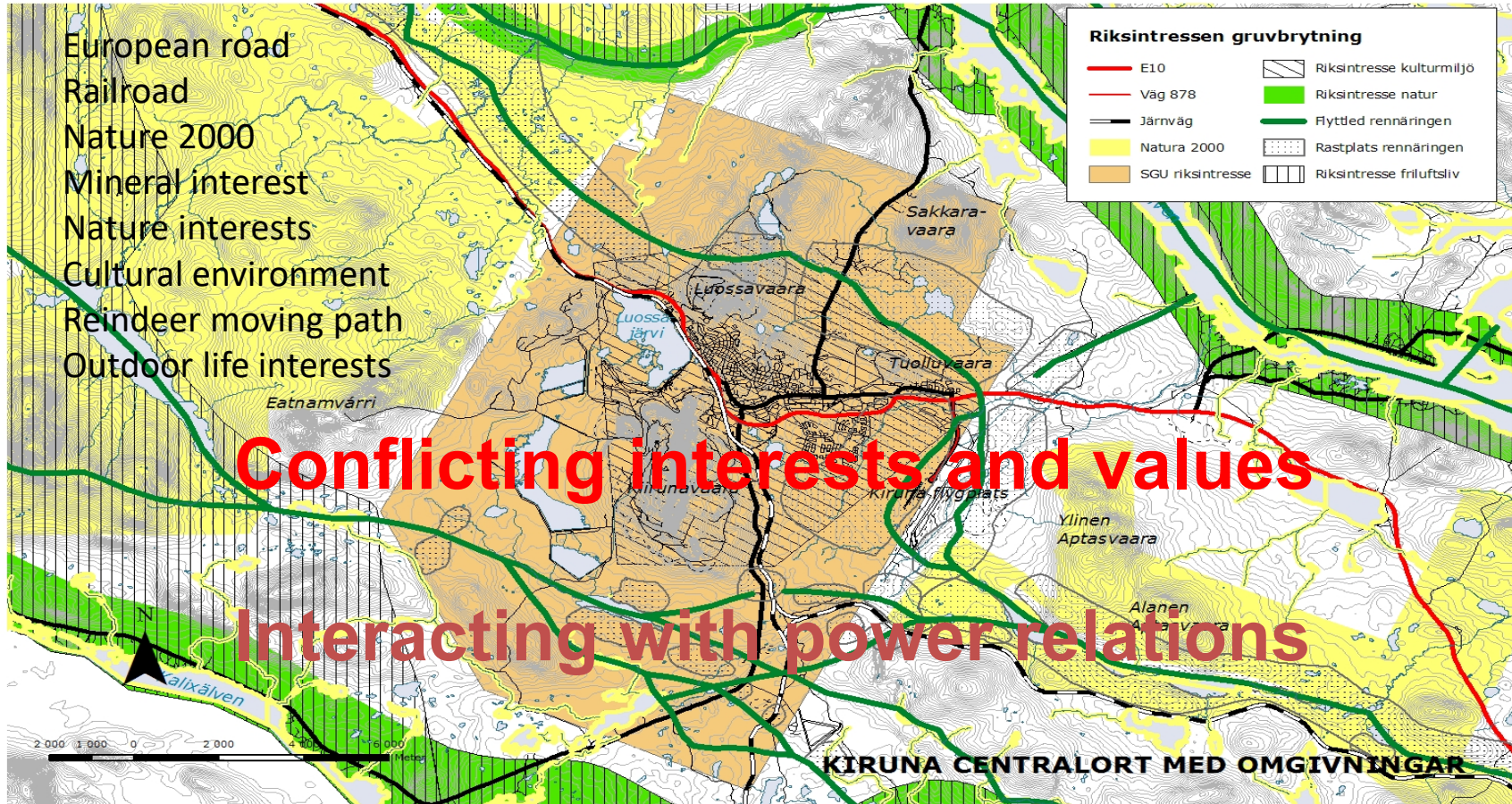


Karta 13.1.2



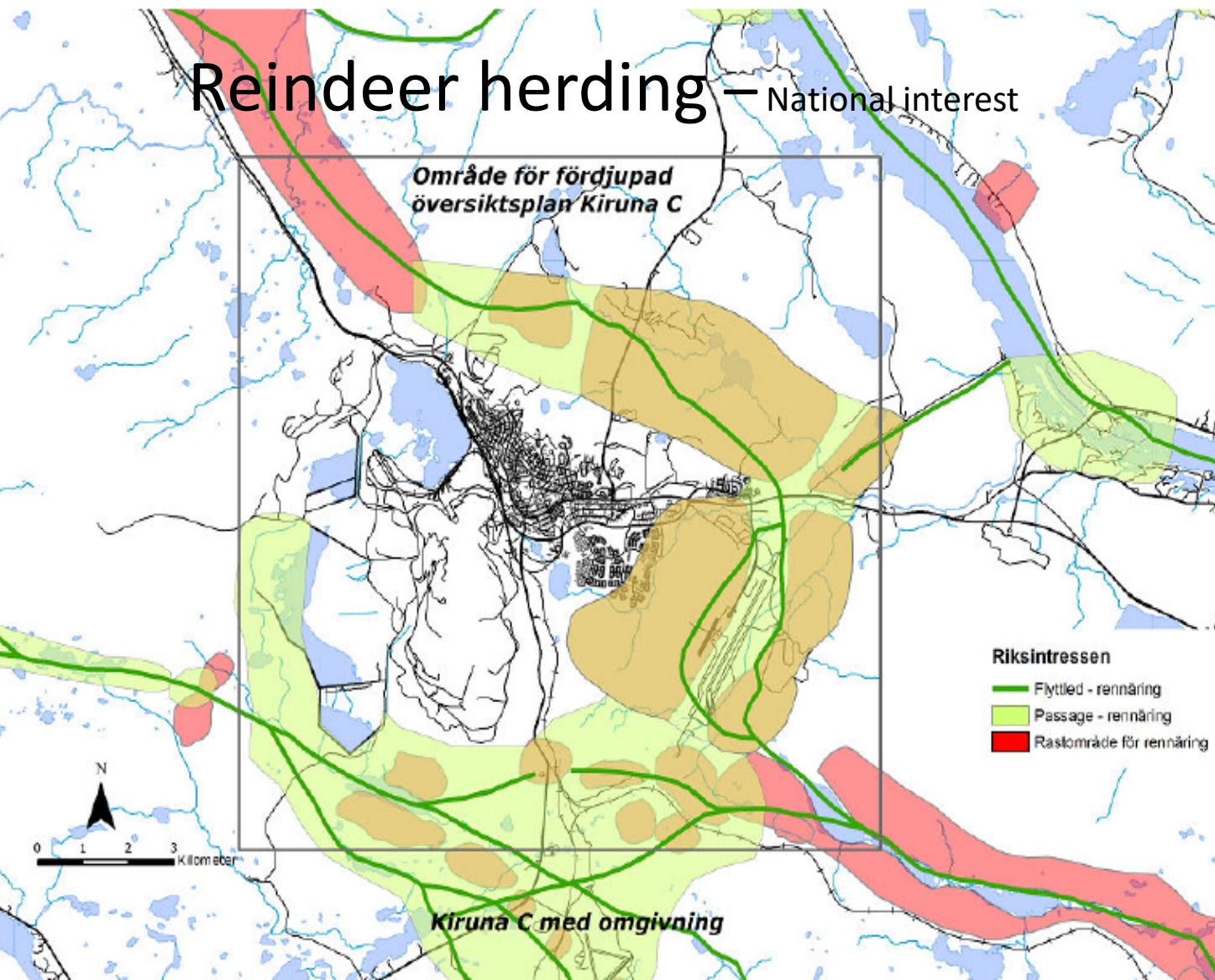
# Overlapping national interests of land-use

Samrådshandling – Fördjupad översiktsplan för Kiruna centralort





# Reindeer herding — National interest



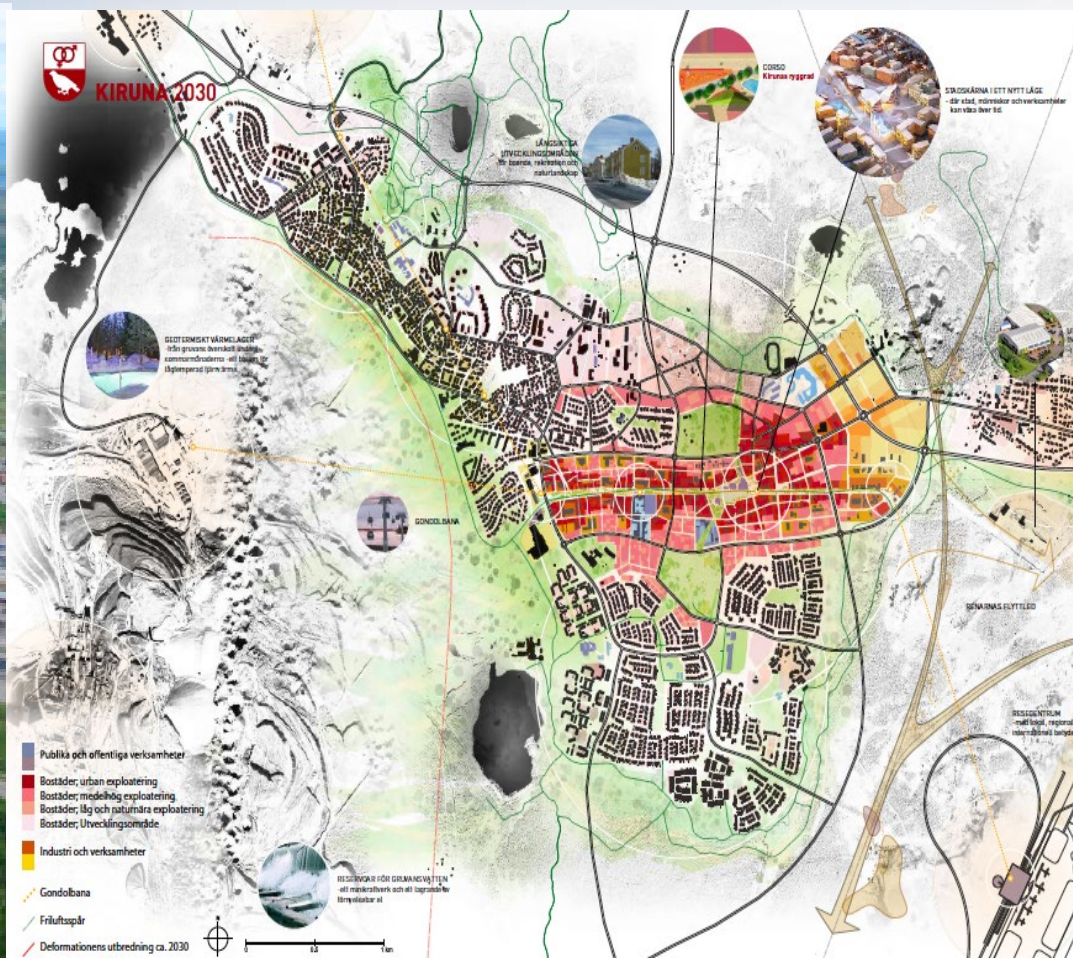
- Reindeer moving path
- dark green line
- Reindeer passage
- Light green
- Reindeer halts
- light red

# Political decision of new center location 2010



Skandinavien nordligaste tekniska universitet  
Forskning & utbildning i världsklass

## Architecture competition 2012



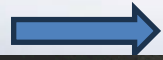


# Kiruna

Old city centre



New city centre  
Denser







# Climate Sensitive Urban Planning and Building

Master Programme in Architectural Engineering



N66° ARC  
LULEÅ



## Plus minus 30

Luleå University of Technology is the northernmost university of technology in Scandinavia with world-class research and education. The changes of climate provide a special quality of life and are a perfect environment for an education in climate sensitive thinking, having temperature degrees from minus 33 to plus 33 here at latitude N66 degrees.





# Questions and discussion



[Kristina.l.nilsson@ltu.se](mailto:Kristina.l.nilsson@ltu.se)