



# Massive Open Online Course (MOOC)

## LECTURE 3 - LAND USE

by Ronald Arvidsson



### FREE ACCESS

[www.ciranproject.eu/mooc/](http://www.ciranproject.eu/mooc/)



Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Health and Digital Executive Agency. Neither the European Union nor the granting authority can be held responsible for them. This project has been funded by the European Health and Digital Executive Agency (HDEA) under Grant Agreement n° 101016133



@ciran-project-eu



@CIRAN\_EU



@CIRANProjectEU



## License

This work is licensed under CC BY-SA 4.0. To view a copy of this license, visit <https://creativecommons.org/licenses/by-sa/4.0/>

# CIRAN Land use, exploration and mining

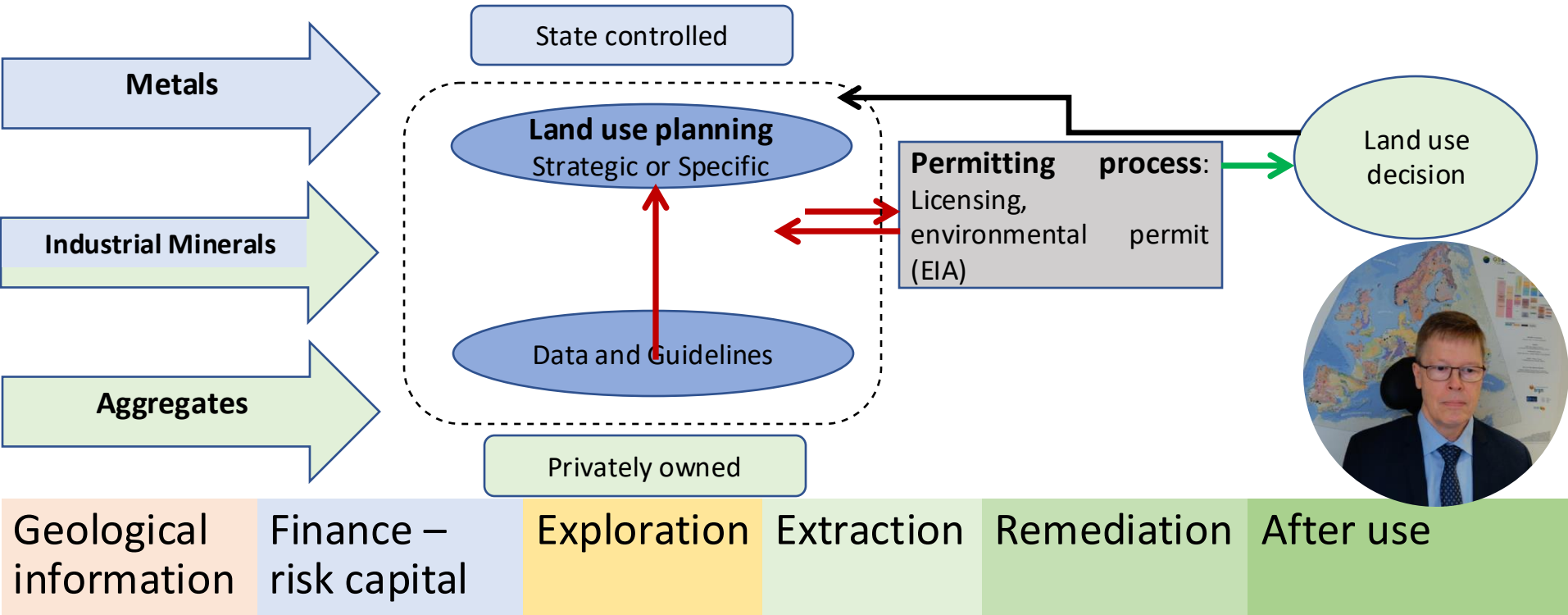
There are two main paths that minerals are treated in permitting and legislation – it will often affect the positioning in the land use process

- Minerals owned/controlled by the state granting a mining company right to extract.
  - ✓ Need exploration permit – often viewed as parallel temporary land use
  - ✓ Need mining permit sometimes coupled to land use rights sometimes indirectly (need separate decision)
  - ✓ Need all other permits like environmental permits (environmental impact assessment– EIA)
- Minerals controlled/owned by the land owner
  - ✓ Mining rights by agreement from the land owner. Mining company
  - ✓ do not need exploration and mining license but all other legal permits like environmental permits – EIA



# CIRAN

## Scheme of land use and permits for the different types of mineral resources



# CIRAN Main land use aspects

1. Access to high-quality data for minerals- and land-use planning
2. Land use tools:
  1. Land use planning processes and instruments which allowed **weighing of interest and changes to land-use and zoning plans**;
3. Minerals assessed on par with other land uses
  1. Design and implementation of **methods that equally assess minerals** and other land uses for a final designation of land use of a given area.
4. Permitting
  1. Exploration as land-use can be done in parallel with other land-uses
  2. Mining license
5. Environmental Impact Assessment (EIA)
  1. is a tool that connects permitting, environmental performance (and sometimes the land use process).
6. Land use for the permitted mine



# CIRAN Practical land use aspects

- Land use plans – need to be possible to amend when needed and not at time of revision 3,5,10 years
- Exploration license – need to be connected to land use - covers often a much larger area than the final mine – can often be done in parallel with other land uses due to limited lasting impact
- Mining license – covers the area of the mineral deposit
- Mining area – sometimes same as mining license – covers deposit and industrial site as well as the area for the waste dumps – waste rock and tailings
- Remediation – i.e. the process including clean up, safe keeping and transformation of the mining site to new land use after the closure of the mine.
  - Demands a cash security or bond from a bank ensuring money available for remediation in case the company goes bankrupt. Otherwise environmental is not granted.



# CIRAN Land use GIS information

- All maps and land use data need to be digital and accessible in a common GIS format.
- Maps of exploration and mining licenses
- Geological maps – found at geological surveys
  - Geological maps
  - Mineral deposits – found at geological surveys
  - Geochemical maps – maps of element concentrations
  - Loose sediment maps of soils, till and loose deposits
  - Geophysical data
    - Geomagnetic maps
    - Resistivity maps
    - Radiometric maps
- Land use information stored by the official land use authority – in Sweden this is done at the municipality. The responsible authority differs from member state to member state



# CIRAN Land use information

Among land uses that mining need to be fit into are or be in conflict or need to adapt to or chosen main land use are:

- Environmentally protected areas
- Heritage areas
- City planning
- Strategic planning
- Infra structure
- Recreational areas
- Other societal important land uses





# CIRAN Land use tools

Depending upon jurisdiction (member state/federal state etc) different tools are needed in order to fit mining into land use planning. Observe that it is preferred to have a dynamic land use process for exploration and mining. Otherwise the time lag from application of permit until commencement can become too long for investors interest (5-10 years)

- Land use planning processes and instruments which allow **weighing of interest and changes to land-use and zoning plans**
- National interests
  - In Sweden and Norway there is a tool called national interests. The land uses of the different important and strategic interest are mapped for the whole country and need to be fir into land use planning even if it done on local level
- Areas appointed for mining – in Greece e.g. there are areas appointed for mining. This needs however a very active mining land use authority that can investigate very rapidly new land use for exploration and mining.
- The permitting like environmental permit based upon environmental impact assessment can function as a tool to direct the preferred land use



# CIRAN Vocabulary

Mining license – necessary permit in order to start mining. In addition several other permits may be necessary

Environmental impact assessment (EIA) – EIA is necessary to prove the environmental integrity of the area around the mine, health and safety and remediation of the in the future closed mine.

Exploration – the search and detailed study of a mineral deposit containing potential ore of raw materials.

Remediation – the process to clean up and prepare the land for new land use once mining has stopped. It usually demands high environmental performance with release of toxic substances within strict limits

Mining inspectorate – the authority which grants exploration and mining licenses (can differ between jurisdictions)

Environmental protection agency – the overseeing authority responsible for upholding a clean environment – often part of the permitting in the EIA process and designating protected areas of nature

# CIRAN Quiz

1. Which authority in your country is responsible for land use processes in permitting of a mine and at what stage?
2. Are there tools to decide preferred land use conflicts in your MS
3. Are there tools to resolve land use conflicts in our country
4. Are there data in your country that can assist in making decisions for permitting and where can these data be found
5. Who decides on the permitting (exploration and mining) of metallic minerals in your country



# CIRAN Suggested reading and information

Information is often in local member state language because of legal conditions. There may be english guidelines – do you have guidelines in your country and can you find them?

Geological information at geological surveys. For Sweden e.g., [Geologiska data](#)'

Land use information – at responsible authority

Minland deliverables D2.1, D2.2 found at [www.minlandproject.eu](http://www.minlandproject.eu)

Thank you





**Funded by  
the European Union**



**Visit our website**



**info@ciranproject.eu • www.ciranproject.eu**

