



Towards sustainable mining and a greener Greenland

Digging up the past to pave the future

Steen Christensen, Head of Agency





The Environmental Agency for Mineral Resource Activities (EAMRA)

- **EAMRA** is the administrative authority on all aspects concerning environment, nature, and climate in connection to mineral resource activities in Greenland.
- **EAMRA** is advised by scientific, independent advisors from:
 - ✓ **DCE** – Danish Centre for Environment and Energy.
 - ✓ **GINR** – Greenland Institute of Natural Resources.
 - ✓ **GEUS** – Geological Survey of Denmark and Greenland

Government of Greenland

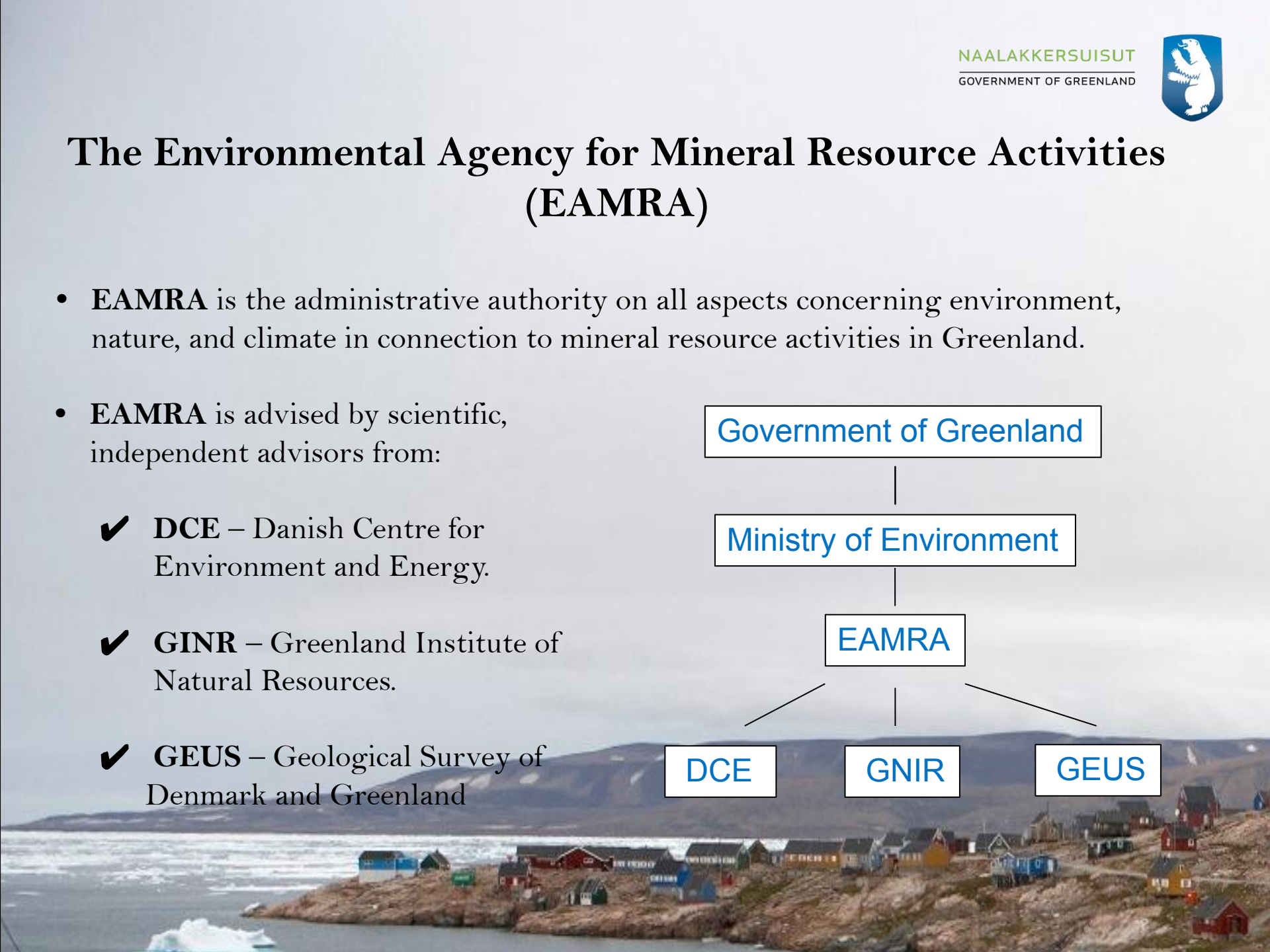
Ministry of Environment

EAMRA

DCE

GINR

GEUS



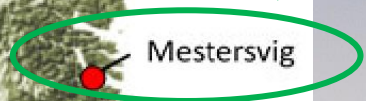
Mining history in Greenland



Lead-zinc-silver 1873-1990



Lead-zinc, 1856-1963



Cryolite (aluminium) 1854-1987



General challenges in the Arctic



- Remoteness and accessibility
- Limited knowledge prior to mining.
- Short time-window for activities

Physical challenges in the Arctic



- Harsh climate.
- Seasonal fluctuations.
- Limited infrastructure.



Challenges in the Arctic – land use and biology

- Low species diversity.
- Hot spots.
- Short food chains with key species.
- Many unknowns.
- Living resources dependency.
- Disturbance sensitivity - human activities.
- Multiple land use interests.
- Cumulative effects.
- Climate change.





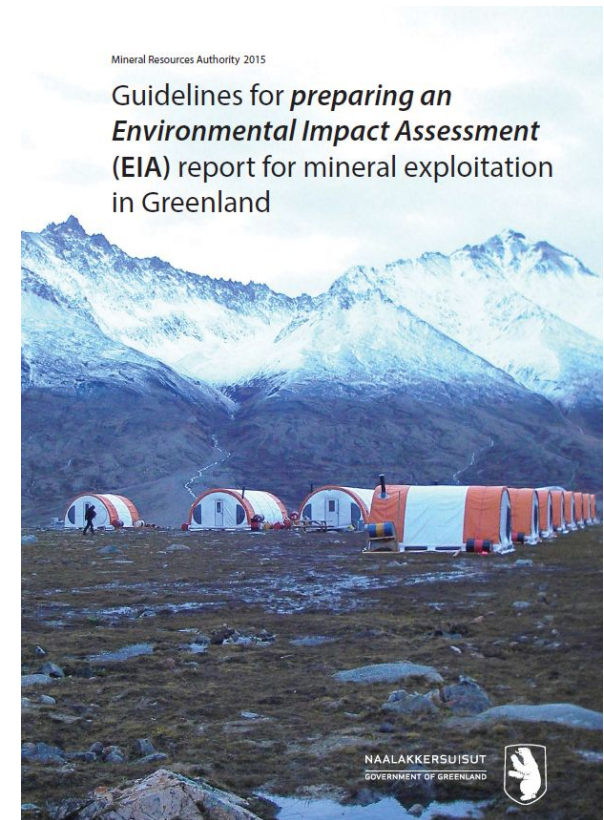
Environmental Impact Assessment (EIA) in Greenland

Activities and processes

- Impacts, mitigation and alternatives

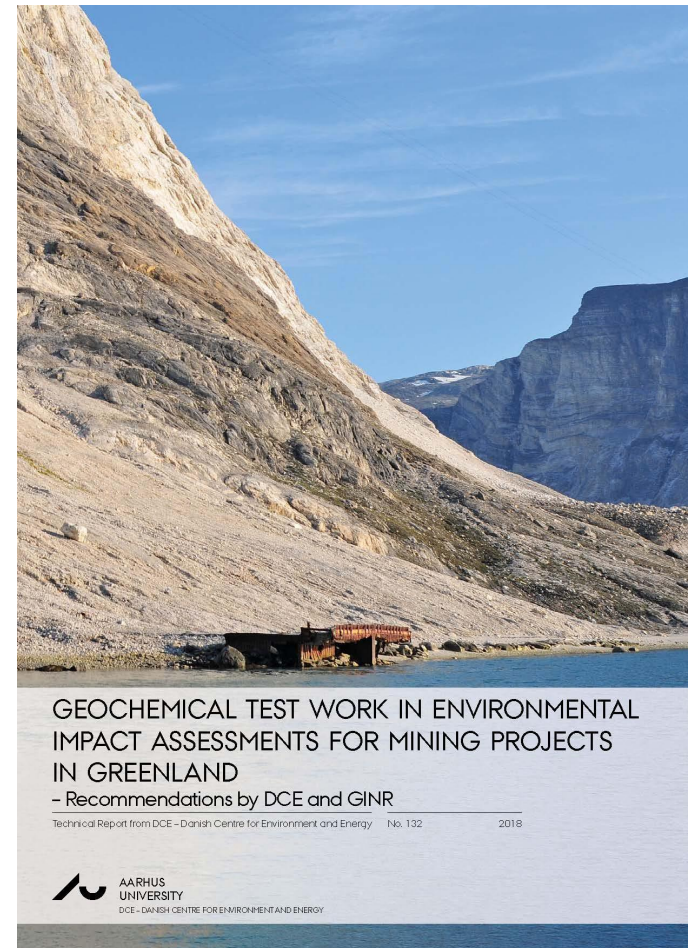
All mining phases:

- Baseline
- Pre-mining
- Operational phase
- Closure
- Post-closure



Environmental Impact Assessment challenges

- Pre-mining baseline conditions.
- Technical documentation.
- Alternative analyses.
- Closure and post-closure phase.
- Predicted effects.
- Quantification of environmental effects.





Future perspectives



Increased focus on:

- Cumulative effects.
- Climate change □ temporal variations.
- Dialogue and community engagement
- Implementation of greener solutions.
- BAT + BEP.